

LIVE LIFE NON-STOP



**Su-Kam**  
*Ek nayi soch*

PRODUCT CATALOGUE 2013-14  
(HOME UPS/INVERTER/SOLAR/BATTERIES/POWER ACCESSORIES)



Su-Kam Power Systems Limited is the leader in the power back-up industry in India having established international standards based on quality, reliability and safety. Headquartered in Gurgaon and with 6 state-of-the art manufacturing facilities, this ISO 9001 and ISO 14001 certified company leads the market with its product innovation, design sensibility and sales distribution network.

Winner of several awards such as Power Brand 2010, National Award for quality Product from Government of India, Elcina EFY award for Excellence in R & D, 2010 etc, Su-Kam is the only power back-up company to be recognized for its R & D by the Department of Science and Technology.

A continuing focus on quality and a strict adherence to International standards has enabled Su-Kam to export its products to various overseas markets across Asia, Africa, Middle East, EU and the Pacific region. Currently, Su-Kam exports close to 25% of its product range and this is poised to rise exponentially in the years' ahead.

Su-Kam synergizes its expertise in manufacturing traditional power back-up systems with its focus on R & D to continuously develop new products. Su-Kam has close to 70 patents and several breakthrough technologies to its credit. This technological edge has ensured Su-Kam's position as one of the most sought after brand in power-back, both nationally and internationally!

Welcome to the official Su-Kam YouTube channel, your source for news about Su-kam ... To know more about Su-Kam you can watch videos through the following links. The links shall lead you to videos of various media coverages, product demonstrations and snapshots of various employee engagement activities.



**Battery Water Topping Kit**

<http://www.youtube.com/watch?v=41LlBC0mGrE>



**Fusion Commercial Ups**

[http://www.youtube.com/watch?v=fYzeAC\\_Sa00](http://www.youtube.com/watch?v=fYzeAC_Sa00)



**How Does Solar Energy Work**

<http://www.youtube.com/watch?v=jOn5GkpbEM>



**Solar Home Lighting System**

<http://www.youtube.com/watch?v=Utl-9i7P-ao>



**Solar Charge Controller**

<http://www.youtube.com/watch?v=jyQruxMrqmA>



**Solar Series**

[http://www.youtube.com/watch?v=THkE\\_ih1p1k](http://www.youtube.com/watch?v=THkE_ih1p1k)



**Power Guard**

<http://www.youtube.com/watch?v=pbz602ylhg8>



**Multiplexer MEGA V2**

<http://www.youtube.com/watch?v=tP9v3wCVRj8>



**Multiplexer Power+**

<http://www.youtube.com/watch?v=tm-OaGizAw4>



**Su-Kam - New Product Launch**

<http://www.youtube.com/watch?v=llxDpcNUlul>



**Su-Kam - TV Commercial (Hindi)**

<http://www.youtube.com/watch?v=N0WLgf-cM5g>



**Su-Kam Corporate Movie - 2013**

<http://www.youtube.com/watch?v=ifWUGq8TO8Q>



**Success Saga of Mr. Kunwer Sachdev**

[http://www.youtube.com/watch?v=MGBomAl\\_XeM](http://www.youtube.com/watch?v=MGBomAl_XeM)



**Su-Kam Sports Week 2012**

<http://www.youtube.com/watch?v=MxJJmV9sw5c>



**Employee Award Ceremony Highlights**

<http://www.youtube.com/watch?v=fujno174Zj8>



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## ABOUT US

Su-Kam was founded in the year 1988 by Kunwer Sachdev, popularly referred to as the 'Inverter man of India'. At present, Su-Kam is one of the leading power back up, generation & monitoring company in India with a wide array of best in class products, In-house R&D center, product innovations, highly efficient manufacturing units, widespread dealer, distributor & service network, robust exports, strong workforce, large project base, numerous awards & recognitions and a wide string of firsts to its credit.

In the coming years, Su-Kam which has forayed in the solar sector already is planning to make huge waves by its innovations and projects in the solar industry. The company is leaving no stones unturned in bringing the best minds together for developing newer solar technologies, products, monitoring software etc. to bring about a solar revolution that shall change the face of the solar industry forever.

### Wide range of products from the Su-Kam stable

Su-Kam manufactures a wide range of over 200 products; each product has been built on a strong foundation of advanced technology backed by innovation. The vast range of product categories Su-Kam deals in are Simple & High Capacity Inverters; Home, Commercial, Online & Line interactive UPSs catering to capacities up to 500 KVA. The company also specializes in manufacturing Lead Acid, Tubular, SMF, Tall Tubular & Automotive batteries, Battery equalizers, Battery accessories along with Diesel, LPG & CNG Gensets for capacities over 1000 KVA. Products in the newly formed solar range include solar inverters, solar charge controllers, power conditioning units, solar lighting systems etc. All these products cater to a wide range of segments; residential, commercial and industrial applications.



### The pioneer of Innovations

At the time of Su-Kam's inception, the power back up sector in India was completely unorganized. Su-Kam's foray into the sector led to development of products with innovative technologies that were never seen before in the country. These developments changed the face of the industry altogether and developed the markets for other players to follow suit. Some of the innovations from Su-Kam that changed the industry are - India's first 'Sine Wave Inverter' that eliminated the irritating humming sound and ensured high quality power output, India's first 'MOSFET based Inverter' and India's first ever 'Home UPS' that combined the functions of an inverter and UPS and eliminated the use of two systems. Su-Kam was also the brains behind developing India's first ever 'High Capacity UPS' that could run ACs, refrigerators and other heavy load equipments. It was also the first company to develop India's first 'Plastic Body Inverters'; the product 'Chic' being adjudged as one of the top innovations of the decade!

**Changing the existing paradigm: Advancing rapidly in the field of Solar**

Today, Su-Kam is a dominant force in the power back up energy sector in India. It started with manufacturing inverters which changed the age old paradigm and converted the inverter industry into a highly technically advanced sector.

Over the years, Su-Kam has constantly developed products through innovation and advanced technology. The company has now forayed into the solar sector. In this sector as well, Su-Kam has introduced highly useful and value-for-money products for the common man and executed large projects for commercial and industrial applications, thereby reducing the customers' hefty renewable energy bill expenses and contributing in the process in reducing their carbon footprint.

Due to Su-Kam's innovation in the field of solar, a common user can convert his existing inverter into a solar inverter by using Su-Kam's solar mate product. He can light up his home in remote locations and villages through Su-Kam's solar home lighting system. He can shift to solar inverters through Su-Kam's Brainy, Solar PCUs, Charge controllers, and monitor and track the solar output of his appliance through the remote monitoring software and umpteen number of other Su-Kam solar applications.

**State-of-the-art Manufacturing facilities**

Su-Kam has 6 state-of-the-art factories in India. All the manufacturing facilities combine the latest technologies with best practices and are certified under OHSAS – 18001 for operational health and safety.

The plants are fully equipped with Automatic Testing Rigs for inspection of control cards & various other products besides being endowed with automatic wire cutting, stripping and crimping machines, conveyerised production lines & on line computerized product testing facilities with a highly-trained technical team functional at all levels.

Some of the Quality Control Systems incorporated in the manufacturing facilities are SQA - Supplier quality assurance and capability analysis, IQC- Quality of incoming raw material, IPQC - In-process product quality control, PDQA - Checking the quality of products at the pre-dispatch stage, IQA- Internal quality audits as per ISO 9001, ISO 1400 requirements. The company also follows sampling plan as per standard IS 2500 & AQL 0.65 and Pre Dispatch Quality Assurance is done on Sampling basis as per IS 2500 & AQL 1.5.

Su-Kam has been awarded coveted certifications from the most stringent certifying organizations globally, some of which are CE, UL, ISO 9001 and ISO 14001. The Company's inverter plants have a capacity of manufacturing 2.5 Lac Inverters per month. The company's transformer plant is the largest manufacturer of transformers in the industry!



## Large projects undertaken by Su-Kam

Su-Kam has conducted large scale Off Grid and Grid Tie solar roof top installation projects across numerous sites in both India and abroad.

In India, the company has installed solar systems in the Assam Rifles regiment in Nagaland & Mizoram; in remote forest areas of the Madhya Pradesh Forest Department; in Govt. buildings like the Raj Bhawan in Itanagar, Assam State Electricity Board; Reputed colleges like Loyola College in Chennai, Gates Institute in Andhra Pradesh, J.J.Polytechnic in Trichi; at a number of petrol pumps across India in both remote and populated locations; in hospitals and nursing homes in Bihar, Andhra Pradesh & Maharashtra; street lighting projects in Tamil Nadu and in industries like Ashok Leyland to name a few. In all the aforementioned projects, the company has reduced the site's requirement of energy from conventional sources of energy to almost 0%!

Su-Kam has undertaken a large number of solar projects overseas, some of them being installing solar solutions to power telecom towers in Afghanistan to aid the US army's needs, solar solution installation at schools, colleges, institutions, hospitals, industries, forests, street lights in African countries of Nigeria, Rwanda, Gabon, Malawi etc. to name a few.



Solar project installation for telecommunication towers in Afghanistan



Street lighting project in Gabon, Africa



90 kWp Grid Tie Solar installation for Engineers India Limited (EIL), Gurgaon, Haryana



100 kWp Solar Power Plant for Assam State Electricity Board, Assam



1 MWp Solar Power Plant installation for Assam Rifles (North East India)



40 kWp Solar Power Plant at the Governor House in Itanagar, Arunachal Pradesh



Solar installation at 784 sites for the Madhya Pradesh Forest Department



Power back up solution provided to Bharti Walmart



Solar & Wind Hybrid system installation in remote villages of Malawi, Africa

## Global presence

Su-Kam has a massive presence in over 70 countries across the globe covering the major expanse of Australia, Japan, Asia Pacific, South East Asia, Africa, Middle East and Latin America. The company is present in a vast expanse of the global market encapsulating all major continents and subcontinents.

In the year 2003, Su-Kam Power Systems became the first company in the power back up industry in India that started exporting power back up products and solutions to foreign markets. Over these years, across various geographies overseas, Su-Kam has built up a channel network in over 70 countries, established 52 highly efficient service centers with 200 service employees forming a part of its workforce globally. Su-Kam has branch offices in Nigeria, UAE and Bangladesh with over 1200 dealers and distributors overseas. In 2012-13 alone, the company clocked revenue of over 110 crores from exports!

Su-Kam is a registered brand in over 25 countries across the globe with some of them being US, China, Nepal, Bangladesh, Africa to name a few. Su-Kam has emerged as the biggest brand in its category in 22 countries across the world! The Su-Kam brand is the number 1 power back up brand in African countries like Uganda, Nigeria, Kenya, Malawi, Congo and Burundi etc.

Su-Kam's inverters/UPS/batteries are the most sought after brand in a number of nations owing to their supreme quality, with the company's client base including diverse sectors like the retail sector, corporates, Govt. projects, projects for international organizations like DFID, UNAID, WB etc. In recent years, Su-Kam has also undertaken some large solar projects powering schools, colleges, hospitals, govt. bodies, defense sector buildings, telecom towers, hospitals, street lights etc. in African Nations of Gabon, Malawi, Nigeria, Rwanda, Zambia and Afghanistan to name a few.

The Su-Kam global and R&D team have made efforts to constantly assess the needs of the customers, react timely to the various demands of the market and develop products accordingly. The company regularly holds dealer and distributor meets for their international channel partners and is a prominent participant in exhibitions and trade fairs across the world. Su-Kam has also sponsored sports events in countries like Dubai, Malawi, Nepal, Nigeria, Senegal and Uganda.

Su-Kam was declared the highest exporters of power back up products by the Govt. of India. The company also bagged the Star Exporter Status form DGFT, GOI!



## Global Certifications

Su-Kam was the first company in the power back-up industry in India to obtain a CE certification. CE mark certifies that a product has met European standards of Consumer safety, Health and Environmental requirements. CE certification is a must to export to 27 countries of Europe. Su-Kam also holds additional certifications like OAPI, ISO9001:2008, ISO 14001:2004, IEC 61215 Standards and ARIPO Certificate.

## Widespread Dealer, Distributor & Service Network

Across various geographies in India and abroad, Su-Kam has built-up a wide and robust network of over 30000 dealers and distributors and has also set-up 200 service centers worldwide. Since its inception, the Su-Kam sales team has strived hard to set up this wide dealer-distributor network in every nook and corner of India and abroad by invoking confidence and spreading awareness about the best-in-class and technologically highly advanced Su-Kam products and services. Su-Kam's call center is functional 24\*7 and works in unison with Su-Kam's team of service engineers who are spread throughout the country to provide round the clock service to all the customers.

## The change agent in the field of technology and marketing

Su-Kam was the first company in the Power back up industry in India to set up an in house R&D unit that churned out highly advanced power back up products and technologies that changed the face of the inverter industry and paved the way for other players to adopt the technologies introduced by Su-Kam.

The Su-Kam R&D center was recognized by the Central Government's Department of Scientific and Industrial Research in the year 2002. The Su-Kam R&D team has developed various new products and has filed the highest number of patents in the industry. Su-Kam is credited with the largest number of patents filed for technology and design and has over 80 technology patents, 180 Copyrights and 170 trademarks to its credit. With nearly 2 technology patents filed every month, the company expects to file an impressive 100 technology patents by this year end.



Today, the R&D team of Su-Kam has 45 highly experienced experts and has a number of awards to its credit. Su-Kam is the only power back-up company to have earned remarkable recognition from the Department of Scientific & Industrial Research, Govt. of India for its contribution to technology.

Su-Kam has built a strong brand image by undertaking extensive marketing activities since its inception. The company has undertaken marketing activities like innovative advertising campaigns both print and electronic, outdoor hoardings like Dhaba branding on highways & villages, shikara branding, van activities, traffic barricade branding, reality talent hunt shows etc. Today Su-Kam enjoys the brand image of being an innovative and honest power back up solutions provider in India and abroad among the masses.



## Work culture inspiring holistic growth

Su-Kam, which has a strong employee base of over 3000 members, strongly believes in creating a workplace environment that is extremely conducive for the growth of all its employees. At Su-Kam, the workplace offers an environment that provides each employee the independence to express their views and opinions freely irrespective of the position they are at. Each employee is allowed to be experimenting and given freedom to bring about his own work place innovation. The company conducts regular training programs and off sites for employees to help them develop and grow further and to foster a holistic learning environment.

The company awards its high performers, achievers and long term employees at various ceremonies eg. Long service awards, Employee of the year award, Pat on the back award, Fast track promotions, Cross functional movements etc. Su-Kam therefore provides them an environment and platform to grow, gather experience and excel in life.

The company believes in engaging employees through various engagement activities like festival celebrations, birthday celebrations etc. A special weeklong activity called sports week is conducted every year wherein the company encourages employees to participate in sports/games of their choice. Through this initiative, not only do all employees realize and nurture the spirit of sportsmanship but also get an opportunity to bring out the best in each one of them. The series of games



and matches stimulate a healthy competitive attitude and helps all Su-Kam employees to bond together as a family at the same time.

Su-Kam has several employees who have completed more than 20 years, 15 years and 10 years with the company, respectively. The company ensures that an employee who strives hard and is deserving, moves up the ladder quickly. For eg. Su-Kam's current Director-Technical had joined the organization as Senior Engineer and has moved to his current position in a very short time span of just 10 years.

**Su-Kam-Widely covered by media in India and abroad**

Media in India and abroad has covered Su-Kam extensively. India Today magazine featured Su-Kam in the year 2010 naming it as one of the top 10 innovations of the last decade!

Numerous other leading publications like The Times of India, Hindustan Times, The Hindu, Indian Express, Business India, Business Today, Zee Business, CNBC, ET Now, Times Now, NewsX to name a few have been covering Su-Kam's story for years now.

Su-Kam is also known to be the 'Most written about' company in the field of power back up solutions. The saga of Su-Kam has been included in the book – 'How 11 Indians pulled off the impossible – Making Breakthrough Innovation Happen', written by Mr Porus Munshi and published by the world famed Harper Collins Publishers. Another book 'Connect the dots' by Rashmi Bansal talks about the journey of Su-Kam's founder Mr Kunwer Sachdev and the company's journey since inception. A case study of Su-Kam has also been included in management studies at the renowned IIM, ISB & MDI.

**Su-Kam**  
Et, naya, with

Selection of Chic Inverters as one of Top 10 Innovations by 'India Today' comes in same category as Tata Nano, Reva.

**PLASTIC BODY INVERTER, 2002**  
Designed by Su-Kam, it uses advanced plastics to withstand high temperatures and yet gives a user-friendly finish.

**IGNITED MINDS**  
20 INNOVATORS WHO ARE CHANGING OUR LIVES

"Plastic body inverter-2002"-Designed by Su-Kam, it uses advanced plastic to withstand high temperatures and yet gives a user-friendly finish.

Customer Care No. : 1800-103-4423 (Toll Free) | www.su-kam.com | ems : SUKAM to 57007

**INDIA TODAY**

**KUNWER SACHDEV**  
Entrepreneur who made a fortune out of his 1000 sq. ft. workshop in a village

**THE POWER ECONOMY**

N... the power industry is the backbone of the nation's economy. It is a sector that has seen rapid growth in the last decade. The government's focus on infrastructure development has led to a surge in power generation and distribution. This has created a massive market for power backup solutions, which is where Su-Kam has thrived. The company's innovative plastic body inverters have become a household name, offering a reliable and user-friendly solution to power outages. Kunwer Sachdev, the founder of Su-Kam, has built a successful business from a small workshop in a village to a leading manufacturer of power backup solutions in India.

**दैनिक भास्कर**  
सु-कैम ने लगाया सोलर पावर प्लांट

सौर ऊर्जा का उपयोग करके प्रदूषण मुक्त बिजली का उत्पादन करने के लिए सु-कैम ने एक सोलर पावर प्लांट शुरू किया है। यह प्लांट हरियाणा के एक गांव में स्थित है और यह क्षेत्र के लोगों को स्वच्छ और सस्ता बिजली प्रदान करेगा।

**THE HINDU**  
Solar powered package from Su-Kam

The company has developed a solar powered package that can be used in remote areas where there is no access to the grid. This package includes a solar panel, a battery, and an inverter, all housed in a single unit. It is a perfect solution for powering small businesses and homes in rural areas.

**Business Line**  
Su-Kam offers 7-year guarantee

Our Chennai Bureau press release from the Su-Kam Power Systems, a power back up solutions provider, is offering a 7-year guarantee on its products under the Home UPS segment. The company boasts of a strong in-house R&D team that has developed and tested its products for enhanced quality and efficiency, said a company official.

From the author of the bestseller **STAY HUNGRY STAY FOOLISH**

**Rashmi Bansal**

**ST-D-TS**  
**THE**  
**CONNECT**

The inspiring stories of 20 entrepreneurs without an MBA, who dared to find their own path.

**Business India**  
A chance encounter

The story of how a chance encounter led to the founding of Su-Kam. Kunwer Sachdev met a friend who was looking for a reliable power backup solution. This led to the development of the plastic body inverter, which has since become a market leader.

**HOW 11 INDIANS PULLED OFF THE IMPOSSIBLE**

**MAKING BREAKTHROUGH INNOVATION HAPPEN**

**PORUS MUNSHI**  
Mumbai Investment Practitioner - Toronto Investment Consultant

**THE TIMES OF INDIA**  
Inverting Power Cuts

While most people complain about power cuts, Su-Kam has found a way to invert them. Their inverters ensure that power is available even during the most difficult times, making them a valuable asset for businesses and homes alike.

## Awards & Recognitions

Su-Kam has received a number of awards and accolades over the years for innovation, exceptional products and quality of service provided by the company. Some of these are:

### FEW OF OUR ACCOLADES



Power Brand India 2009-10



Asian Leadership Award for Brand Excellence in Business Innovation



Asia's Most Promising Brand Award



Inc. Innovative 100 Award for "Excellence in Innovation"



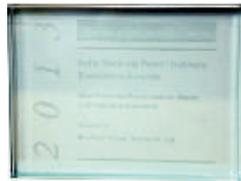
Best Overall Talent Management Organization of the year by ET Now



EFY Reader's choice award for SMF batteries



EFY Reader's choice award for UPS systems



Frost & Sullivan Voice of Customer Award



India Inc. 500 "Fastest Growing Organization Award"



Enertia Award 2011



Entrepreneur of the year award by Franchise India



Business Superbrand



Innovation for India Award by Marico Award Foundation



Consumer Superbrand



Sectoral Award-Non SSI (Consumer Electronics) from Export Promotion Council, Government of India



ELCINA - EFY Award for excellence in R & D



West Africa's Best Inverter Brand



West African Branding Excellence Award



Africa's Most Reliable Brand Award



National Award for Quality Product from Government of India



Amity HR Growth Award in Global Business

The List Continues...

## DIGITAL HOME UPS

**100VA - 2500VA**

India's first ever 'Home UPS' was developed by the ingenious efforts of Su-Kam's R&D team. The development of the Su-Kam Home UPS system was instrumental in changing the face of the power back up industry in India altogether, which enabled other players to follow suit. Su-Kam's Home UPS systems are a truly futuristic concept. The 'Home UPS' combined the functions of an inverter and UPS. The two-in-one product completely eliminated the need to have separate power back-up systems for powering home equipments and computers.

The versatile Home UPS systems are available in a range of capacities in Digital Home UPS, quasi sine wave technologies. This highly advanced product from the Su-Kam stable enables the consumer to derive uninterrupted power supply even during erratic power cuts; whether it is to do household or office work.



# Digital Home UPS

## PICO SERIES



**PICO - 100VA/12V**

Product Code : HUP-PC-QW-012AA-00100

Pico is a revolutionary New 100VA Digital Home UPS which is portable. Its user-friendly interface makes it ideal for small home appliances like the Laptop, CFLs, Mobile Charger, Table Fan, Radio etc. It is light-weight, easily mountable and consumes less space due to in-built battery feature. Pico is based on the latest & advanced Micro Controller based PWM technology using MOSFETs which facilitates optimal power usage.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Peak Power Output 300%.
- ▶ User Friendly LED Display.
- ▶ Very Fast Switch Over Time.
- ▶ In-built CFL Holder.
- ▶ In-built 7.2 Ah SMF Battery.
- ▶ Micro Controller Based PWM Technology using MOSFETs.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ User Friendly LED display.
- ▶ Power Switch active indication.
- ▶ 3 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### Smart LED Alerts

MAINS ON	●	BATT. CHARGE
HUPS ON	●	BATT. LOW
OVER LOAD	●	SHORT CIRCUIT

## LOAD CHART & APPLICATIONS

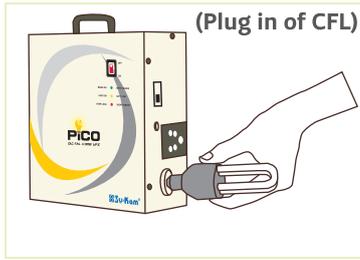
PICO 100VA/12V						
Load Options	A	B	C	D	E	F
Table Fan	1	1	-	-	-	-
Tube Light 40W	-	-	1	-	-	-
CFL 11W	1	-	2	2	1	6
Laptop	-	-	-	1	1	-
Mobile Charger	-	1	-	-	1	-
<b>Back-Up time as per load</b>						
Applications	1 CFL*	3 CFL*	1 Laptop	1 Table Fan	1 Table Fan+1 CFL	
Back-Up Time	upto 7.5 hrs.	upto 3 hrs.	upto 3 hrs.	upto 1.30 hrs.	upto 1 hr.	

Note : Indicative values only, actual calculation depend on manufacturer's specification.

# Digital Home UPS

## PICO SERIES

### ADVANTAGES



#### Power Switch

The power switch has to be ON while charging the battery or while using the system in the back-up mode.

#### AC Fuse

An AC fuse has been provided to counter overload.

#### UPS/W-UPS Mode Switch

A button enable users to switch from UPS mode (for sensitive appliances) to Wide UPS mode (for non-sensitive appliances).

#### Handle

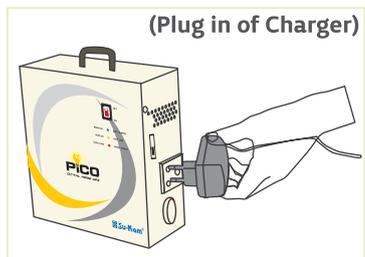
Sturdy, metallic handle for easy transportability.

#### Easy-to-handle

Light weight, portable and effortlessly mountable in 3 different position.

#### Inbuilt Battery

7.2 AH SMF in-bulit battery for power back-up



#### Output Socket

Output socket with a 5 pin point plug has been provided to use the UPS system for different applications i.e. Mobile charging, CFLs, Laptop charging, Modem, Radio, Table Fan, Wire extension etc.

#### Holder

User can plug-in a CFL into the holder and use it as an emergency light too.

#### Power Cable

Cable has been provided to charge the system anywhere anytime.

## Technical Specifications

<b>Model</b>	<b>PICO SERIES</b>
<b>Capacity</b>	<b>100VA/12V</b>
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>
Mains A.C. Low cut	185 ± 10V
Mains A.C. Low cut Recovery	190 ± 10V
Mains A.C. High cut	265 ± 10V
Mains A.C. High cut Recovery	260 ± 10V
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>
Mains A.C. Low cut	105 ± 10V
Mains A.C. Low cut Recovery	120 ± 10V
Mains A.C. High cut	285 ± 10V
Mains A.C. High cut Recovery	275 ± 10V
<b>OUTPUT PARAMETER</b>	
Mains Output Frequency	Same as Input (45 Hz-55Hz)
Output Frequency	50.0 Hz. ± 0.1 Hz
Output Voltage with Full Load	200V-230V ± 25V
Overload	Above 110%
Short Circuit protection	>250% Load (Few msec)
<b>BATTERY CHARGING</b>	
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>	
Charging Current	1.0A ± 0.2 Amp
Charging Boost Voltage each Battery	13.9 V ± 0.2 V
Charging Float Voltage each Battery	13.6 V ± 0.2 V
Battery Lower Voltage Cut each Batt.	10.5 V ± 0.2 V (Load dependent)
Recommended Battery Capacity	7.2 Ah
Dimension (W XDX H) in mm	214 x 88 x 247
Weight(Kg)	5.2

**Note: Specifications are subject to change without any prior notice.**



# Digital Home UPS

## FRENDY - i SERIES



### Smart Graphics Alerts



### FRENDY-i SERIES - 400VA/12V

Product Code : HUP-FI-QW-012AA-00400

The twin advantage of Su-Kam's Frendy i Digital Home UPS completely eliminates the need to have separate power back-up system for your home appliances and computers. Powered with the world's most advanced sine wave technology, this Home UPS system provides 100% pure power which runs all appliances without the irritating humming sound.

Armed with Su-Kam's patented Fuzzy Logic Control Advanced Technology, which protects the battery, reduces water topping and enhances battery life, the Frendy i Digital Home UPS saves upto 40% electricity bills as compared to square wave inverters.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipments & computers.

#### Product features

- ▶ Peak Power Output 300%.
- ▶ User Friendly LED Display.
- ▶ Very Fast Switch Over Time.
- ▶ Battery over charge protection.
- ▶ Battery deep discharge protection.
- ▶ Micro Controller Based PWM Technology using MOSFETs.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 3 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

FRENDY-i 400VA/12V			
Load Options	A	B	C
Computer 150W	1	-	-
TV 19-21"	-	-	1
Tube Light 40W	-	-	-
Fan 48 MM	-	2	1
CFL 11W	2	2	2
<b>Back-Up Time in Hrs.</b>			
Macroz 50 Ah	1.40	1.10	1.10
Macroz 70 Ah	2.40	2.0	1.40
Macroz 100 Ah	4.10	3.0	2.50

\* Recommended battery 50AH - 100AH

# Sine Wave Home UPS

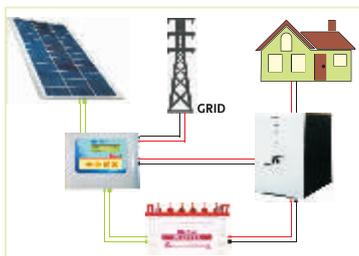
## FRENDY - i SERIES

### Technical Specifications

<b>Model</b>	FRENDY-i SERIES
<b>Capacity</b>	400VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)
Mains A.C. Low cut	185 ± 10V
Mains A.C. Low cut Recovery	190 ± 10V
Mains A.C. High cut	265 ± 10V
Mains A.C. High cut Recovery	260 ± 10V
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)
Mains A.C. Low cut	105 ± 10V
Mains A.C. Low cut Recovery	120 ± 10V
Mains A.C. High cut	285 ± 10V
Mains A.C. High cut Recovery	275 ± 10V
<b>OUTPUT PARAMETER</b>	
Mains Output Frequency	Same as Input (45 Hz-55Hz)
Output Frequency	50.0 Hz. ± 0.1 Hz
Output Voltage with Full Load	200V-230V ± 25V
Overload	Above 110%
Short Circuit protection	>250% Load (Few msec)
<b>BATTERY CHARGING</b>	
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>	
Charging Current	5.0 ± 0.1 Amp
Charging Boost Voltage each Battery	13.9 V ± 0.2 V
Charging Float Voltage each Battery	13.6 V ± 0.2 V
Battery Lower Voltage Cut each Batt.	10.5 V ± 0.2 V
Recommended Battery Capacity	50AH-100AH
Dimension (W XDX H) in mm	135x205x210
Weight(Kg)	6.1

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



Panel Range : 250VA-450VA HUPS up to 160Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Macroz Tubular Battery

Su-Kam's Macroz Tubular Battery is a unique product and the first of its kind in this range that is specially designed for HUPS applications. Macroz has a distinct advantage of longer backup with longer life. The spines of the new batteries are cast with superior material for deep discharge capability enabled by its thick plates.



# Digital Home UPS

## MICRON SERIES



### Smart Graphics Alerts



Product Code : HUP-MN-QW-012AA-00150  
HUP-MN-QW-012AA-00250

### MICRON SERIES - 150VA/12V, 250VA/12V

Small HUPS for small need Su-Kam's Micron Digital Home UPS meets your budget and needs in a special way. It is designed for homes and business establishments where the day-to-day requirement does not exceed a few light bulbs, fans or a favorite TV show. Micron is an advanced Digital HUPS made for running regular household appliances such as CFL bulbs, fans, laptops and television sets. This portable powerhouse comes in two different capacities i.e. 150 VA HUPS with 25AH Macroz Tubular Battery & 250VA HUPS with 50AH Macroz Tubular Battery along with a long warranty period. So add Micron to your life today and enjoy a fruitful partnership.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Great Power Saving.
- ▶ Compatible with all type of batteries (Tubular / Flooded Lead Acid battery).
- ▶ Extra back-up for computers as compar to ordinary UPS.
- ▶ Very Fast change over time.
- ▶ Manual Static by-pass switch.
- ▶ Intelligent thermal management.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 3 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	MICRON 150VA/12V			MICRON 250VA/12V		
	A	B	C	A	B	C
Laptop	-	-	1	1	-	-
TV 14" -	-	-	-	-	1	-
Tube Light 40W	-	1	-	1	-	1
Fan 48 MM	-	-	-	1	2	1
CFL 11W -	7	4	4	2	2	-
<b>Back-Up Time in Hrs.</b>						
Macroz 25 AH	1.9	1.8	1.9	0.9	1.10	0.9
Macroz 50 AH	3.2	3.0	3.4	1.5	2.2	1.5

\* Recommended battery 25AH for 150VA/ 50AH for 250VA

### Technical Specifications

Model	MICRON SERIES		
Capacity	150VA/12V		250VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>LEAD ACID</b>	<b>TUBULAR</b>
Charging Current	4 ± 1.0 Amp	4 ± 1.0 Amp	4 ± 1.0 Amp
Charging Boost Voltage each Battery		13.9 ± 0.2 Amp	
		14.4V + 0.2 V	
Charging Float Voltage each Battery		13.6V + 0.2 V	
Battery Lower Voltage Cut each Battery		10.5 V ± 0.2 V (Load dependent)	
Recommended Battery Capacity	25AH-50AH		
Dimension (W XDX H) in mm	118x180x150		
Weight(Kg)	2.65		3.0

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



Panel Range : 150VA-250VA HUPS up to 160Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Macroz Tubular Battery

Su-Kam's Macroz Tubular Battery is a unique product and the first of its kind in this range that is specially designed for HUPS applications. Macroz has a distinct advantage of longer backup with longer life. The spines of the new batteries are cast with superior material for deep discharge capability enabled by its thick plates.



#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping

# Approval & Certificates

## MICRON SERIES

29

No. : ETDC / AMB : 484  
Dt. : 23/5/08

**hartron**

**TEST REPORT**  
ON  
Home UPS (MICRON) 250VA/12V

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 0171-2611704, 2610496, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT, AMBALA CANTT. 133001

**Test Report**

TEST REPORT NUMBER 1/84 DATE 23-5-08 PAGE NO. 1 OF 6  
ETDC(A/CANTT.)

1. Indentor (Name & Address of the organisation sending items for calibration) : Su-Kam Power Systems Ltd.,  
54-Udyog Vihar, Phase-VI,  
Sector-37,  
GURGAON (Haryana)

2. Indentor's Reference : 152303-02  
Dated 16.05.2008

3. Description and identification of the item (As Provided by the Indentor)

I. Nomenclature : Home UPS (MICRON) 250 VA / 12 V

II. Model/Type no. : MICRON

III. Value/Tolerance : -

IV. Serial No. : 160508002

V. Manufactured By : AS ABCVE

VI. Year of Manufacture : 2008

VII. Trade Mark : SU-KAM

VIII. Number of Samples Submitted : One only.

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
G.T. Road, Near IOC Depot, Ambala Cantt. - 133001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT, AMBALA CANTT. 133001

**Test Report**

TEST REPORT NUMBER 1/84 DATE 23/05/08 PAGE NO. 2 OF 6  
ETDC(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
1)	SPECIFIED LOAD	100 W (max.) resistive load	Incompliance	Satis.
2)	MAINS AC VOLTAGE - LIMITS IN NARROW WINDOW-UPS MODE			
a)	Mains AC low cut	185 VAC±10 VAC	188.2 VAC	Satis.
b)	Mains AC low cut recovery	190 VAC±10 VAC	194.5 VAC	Satis.
c)	Mains AC High cut	285 VAC±10 VAC	282.1 VAC	Satis.
d)	Mains AC High cut recovery	280 VAC±10 VAC	297.0 VAC	Satis.
3)	MAINS AC VOLTAGE - LIMITS IN WIDE WINDOW-W UPS MODE			
a)	Mains AC low cut	100VAC±10VAC	108.0 VAC	Satis.
b)	Mains AC low cut recovery	120VAC±10VAC	120.2 VAC	Satis.
c)	Mains AC high cut	280VAC±10VAC	285.1 VAC	Satis.
d)	Mains AC high cut recovery	270VAC±10VAC	299.0 VAC	Satis.
6)	MAINS AC BYPASS MODE (BOTH UPS & W UPS MODES)			
a)	Voltage Window	Same as input	Incompliance	Satis.
b)	Waveform	Same as input	Incompliance	Satis.

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
G.T. Road, Near IOC Depot, Ambala Cantt. - 133001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT, AMBALA CANTT. 133001

**Test Report**

TEST REPORT NUMBER 1/84 DATE 23/5/08 PAGE NO. 3 OF 6  
ETDC(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
5)	OUTPUT IN BACKUP MODE (WHEN MAINS SUPPLY FAILS OR OUT OF SPECIFIED LIMITS)			
a)	Waveform	Quasi Sine wave	Incompliance	Satis.
b)	Frequency	50± 0.1 Hz	Incompliance	Satis.
c)	Output voltage with full Load	180-250 VAC during entire DC range.	224 VAC to 182 VAC	Satis.
6)	TRANSFER TIME			
a)	In narrow Window-UPS mode	< 15msec	8 msec.	Satis.
b)	In Wide Window-W UPS mode	< 40msec	25 msec.	Satis.
7)	BATTERY			
a)	Type/ Voltage	Lead- acid, 12 V, 45 AH to 85 AH	Incompliance	Satis.
b)	Charging Current (at discharge battery)	- 5A± 1A for input mains >150VAC - 1A to 5A for input mains <= 150VAC	5.2 A 1.2 A	Satis.
c)	Low cut battery voltage	10.2V± 0.2 V	10.2 V	Satis.
d)	Battery Boost Charging Voltage	13.9V±0.2 V	13.8 V	Satis.

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
G.T. Road, Near IOC Depot, Ambala Cantt. - 133001

Test Report Certificate - Page 4

# Approval & Certificates

## MICRON SERIES

**Government of India  
Copyright Office  
Extracts from Register of Copyrights**

Date: 22.08.2012

1. Registration No.	A921242012
2. Name, address and nationality of the applicant:	SU-KAM POWER SYSTEMS LTD. 300, NEST (SCEPULURING) NANGAL BAKA, NEW DELHI - 110048 INDIA
3. Nature of applicant's interest in the copyright of the work.	OWNER
4. Class and description of the work.	ARTISTIC
5. Title of the work.	FBG LAYOUT OF INVENTERPHASES PRODUCT
6. Language of the work.	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease.	SHALBEN KUMAR SHARMA SU-KAM COL-2 INDIA
8. Whether the work is published or unpublished.	UNPUBLISHED
9. Year and country of the first publication and name, address and nationality of the publisher.	NIL
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers.	NIL
11. Names, addresses and nationalities of the names of various agents representing the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any.	SAME AS COL-2 INDIA
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license of rights concerning the copyright.	N/A
13. If the work is an artistic work, the column of the original work, including name, address and nationality of the person in possession of it. (In the case of an artistic work, the year of completion of the work should also be shown)	NIL
14. Remarks:	A REPRODUCED COPY OF THE WORK IS RETURNED AND ANOTHER REPRODUCED COPY IS KEPT.

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A92124/2012

**FORM O-2**

**भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

अनुक्र. सं. 821323

अनुक्र. सं. 1634251 दिनांक: 26/12/2007 अक्षर सं. JH/4601

यह प्रमाणपत्र तब तक वैध है कि जिस प्रकार चिन्ह की रजिस्ट्री करने का प्रमाण है, यह चिन्ह के रजिस्टर में दर्ज है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of  
**SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER. (Body Incorporate)**

In Class **9** Under No. **1634251** as of the Date **26 December 2007** in respect of  
**Good Description Continued**

As Annexed

दिनांक: 26/12/2007 से 31st मार्च 2009 तक का प्रमाणपत्र है।  
Sealed at my direction, this 31st day of March 2009

Registrar of Trade Marks

Certificate

**ORIGINAL**

No. 12399

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No.	216031
Date	25 <sup>th</sup> APR 2008
Reciprocity date*	
Country	

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class **11-02** in respect of the application of such design to **"HOME UPS"** in the name of **SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER.**

**INTELLECTUAL PROPERTY INDIA**

in pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

**Controller General of Patents, Designs and Trade Marks**

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAYAR & CO.  
32, RAJHA MADHAR DUTTA GARDEN LANE,  
KOLKATA-700010.

Date of issue:  
26<sup>th</sup> MAR, 2009

Patent - 216031

**ORIGINAL**

No. 0438

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No.	224604
Date	07/09/2008
Reciprocity Date	06/08/99
Country	

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class **11-02** in respect of the application of such design to **DAVTRY THRLT** in the name of **SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER.**

**INTELLECTUAL PROPERTY INDIA**

in pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

**Controller General of Patents, Designs and Trade Marks**

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. S. KAMRUP,  
COL. L. S. DAYAR & CO. PATENT & TRADE MARK  
ATTORNEYS 75 RAJHA MADHAR DUTTA  
GARDEN LANE KOLKATA-700010

Date of issue: 08/03/2011 15:53:19

Patent - 224606

# Digital Home UPS

## COSMIC SERIES



**COSMIC SERIES - 850VA/12V**

The power to perform!

There's more to Su-kam's Cosmic Digital HUPS than its cool, contemporary looks. Underneath that stylish exterior is a superior technology that gives you awesome features, better safety standards and enhanced performance.

Breaking away from traditional style, the R&D team at Su-Kam has given the Cosmic Digital HUPS a very futuristic, smart look with a bright colour scheme making it a lifestyle product that can only add to your home interiors.

The Cosmic Digital HUPS is also available as a complete package with the Cosmic Trolley and a Cosmic 150Ah battery.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for

### Product features

- ▶ Manual Static Bypass switch.
- ▶ Intelligent thermal management.
- ▶ Fire resistant and shock proof body.
- ▶ High-end Micro Controller based design.
- ▶ Matching battery trolley to add to your home interior.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

## LOAD CHART, APPLICATIONS & BACK-UP TIME

**COSMIC 850VA/12V**

Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	-	2
Fan 48 MM	2	3	-	2
CFL 11W	-	-	37	2
<b>Back-Up Time in Hrs.</b>				
LA 135 AH	1.30	1.18	1.36	1.12
LA 150 AH	1.48	1.36	1.48	1.2
LA 200 AH	2.40	2.18	2.42	2.0

\* Recommended battery 100AH - 200AH

# Digital Home UPS

## COSMIC SERIES

### Technical Specifications

<b>Model</b>	COSMIC SERIES		
<b>Capacity</b>	850VA/12V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V	13.6V + 0.2 V	13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	308 x 343 x 170		
Weight(Kg)	9.9		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Approval & Certificates

## COSMIC SERIES

11

No. STD/AMB/95  
DL-29/06/07

**TEST REPORT**  
ON  
UPS-800VA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G. T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE - 0171-2611704, 2610486, TELEFAX - 2633419

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	29-06-07	PAGE NO.	1 OF 4
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1. **Industry**  
(Name & Address of the organization according to item for certification)

2. **Industry's Reference**

3. **Description and identification of the Item** (As Provided by the Applicant)

I. Nomenclature	OFF-LINE UPS-800 VA/ 12 V DC
II. Model / Type no.	HOME UPS
III. Value / Tolerance	-
IV. Serial No.	1560709 B
V. Manufactured By	AS ABOVE
VI. Year of Manufacture	2007
VII. Trade Mark	BU-KAW
VIII. Number of Samples Submitted	ONE ONLY

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	29-06-07	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

A. **TEST RESULTS**

Sl. NO.	PARAMETER	NORMAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm 0.5$ V	Non-compliance	Safe
2)	Mains Low Cut Recovery	180 V AC $\pm 0.5$ V	Non-compliance	Safe
3)	Mains High Cut Voltage	260 V AC $\pm 0.5$ V	Non-compliance	Safe
4)	Mains High Cut Recovery	260 V AC $\pm 0.5$ V	Non-compliance	Safe
5)	Output Voltage and Output Frequency	Should be same as Input Voltage & Input Frequency	Non-compliance	Safe
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Class B sine Wave	Non-compliance	Safe
7)	Output Voltage Range	170 V AC to 280 V AC	Non-compliance	Safe
8)	Output Frequency	50.0 Hz $\pm 0.1$ Hz	Non-compliance	Safe
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa	Parasol Computer should not reboot during change over	Non-compliance	Safe
<b>D. LOAD CAPACITY</b>				
		Should be able to withstand load of 1 Computer & 3 Tubes	Non-compliance	Safe

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	29-06-07	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

3. **Remarks (if any):**

- The report pertains only to the parameters mentioned in the test results.
- The UPS System has been tested as per industry's specifications.

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Test Report Certificate - Page 4

# Approval & Certificates

## COSMIC SERIES

**Government of India**  
**Copyright Office**  
**Extracts from Register of Copyrights**

(C)

Delhi: 23-02-2012

- Registration No. A-921220012
- Name, address and nationality of the applicant: SU-KAM POWER SYSTEMS LTD. 54, UDYO VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER.
- Name of applicant's interest in the copyright of the work: OWNER
- Class and occupation of the work: ARTISTIC
- Title of the work: FOR LAYOUT OF SHORTER BARRIERS (MARK)
- Language of the work: ENGLISH
- Name, address and nationality of the author and if the author is deceased, name of the deceased: SURESH KUMAR SHARMA 43-COL-2, INDIA
- Whether the work is published or unpublished: UNPUBLISHED
- Title and country of the first publication and name of the publisher, if it is published: NA
- Year and country of subsequent publications, if any, and names, addresses and nationalities of the publishers: NA
- Books, pamphlets and catalogues of the owners of rights having concerning the copyright in the work and the nature of rights held by each, together with addresses of assignees and licensees, if any: NA
- Names, addresses and nationalities of other persons, if any, who are entitled to assign or license of copyright: NA
- If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of it, in the case of an artistic work, the year of completion of the work (should also be stated): NA
- Remarks: A SEALED COPY OF THE WORK IS RETAINED AND ANOTHER SEALED COPY IS KEPT.

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - 92122/2012

**भारत सरकार**  
**GOVERNMENT OF INDIA**  
**व्यापार चिन्ह रजिस्ट्री**  
**TRADE MARKS REGISTRY**  
**व्यापार चिन्ह अधिनियम, 1999**  
**Trade Marks Act, 1999**  
**व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)**  
**Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

FORM D-2  
821323

1634251 26/12/2007 JH4601

As Annexed

31st March 2008

Delhi

Registrar of Trade Marks

Certificate

**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 230054

Design No. 230054  
Date: 01/07/2010  
Reciprocity Date: -  
Country: -

INTELLECTUAL  
Copyrights

Registrar of Designs

Patent - 230054

**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 233462

Design No. 233462  
Date: 22/11/2010  
Reciprocity Date: -  
Country: -

INTELLECTUAL  
Copyrights

Registrar of Designs

Patent - 233462

# Digital Home UPS

## CHIC SERIES



### Smart Graphics Alerts



Product Code : HUP-CC-QW-012AA-00650  
HUP-CC-QW-012AA-00850

### CHIC SERIES - 650VA/12V, 850VA/12V

A popular product with a decade long legacy, CHIC has been specially created for those homes where there are small children as it is completely shockproof. Unlike other Home UPSs, it has a PCABS plastic body which makes it extremely safe to place inside the house without fear of small child touching it. Equipped with tough exterior, chic is able to withstand high temperature.

Breaking away from traditional style, the R&D team at Su-Kam has given the CHIC Digital HUPS a very futuristic, smart look with bright colour scheme, making it a lifestyle product that can only add to your home interiors.

**Principle :** Su-Kam HUPS are innovative two-in-one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Soft start capability for starting heavy loads.
- ▶ Fire resistant and shock proof body.
- ▶ High-end Micro Controller based design.
- ▶ Matching battery trolley to add to your home interior.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

## LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	CHIC 650VA/12V			CHIC 850VA/12V		
	A	B	C	A	B	C
Computer 150W	1	-	-	1	-	-
TV 19-21"	-	1	-	-	1	-
Tube Light 40W	2	2	-	1	3	-
Fan 48 MM	1	2	-	1	3	-
CFL 11W	3	5	28	5	5	37
Back-Up Time in Hrs.						
LA 135 AH	1.35	2.0	1.4	1.3	1.18	1.36
LA 150 AH	1.5	2.3	2.0	1.48	1.36	1.48
LA 200 AH	2.0	3.3	2.5	2.4	2.18	2.42

\* Recommended battery 100AH-200AH

# Digital Home UPS

## CHIC SERIES

### Technical Specifications

Model	CHIC SERIES		
Capacity	650VA/12V		850VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>SCR based charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	13.9 V + 0.2 V		
Charging Float Voltage each Battery	13.6 V + 0.2 V		
Battery Lower Voltage Cut each Batt.	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	137x308x205		137x308x210
Weight(Kg)	8.0		8.7

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

11

No. STD/AMB/95  
DL-23/06-07

**TEST REPORT**  
ON  
On Line UPS-800VA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G. T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 0171-2611704, 2610486, TELEFAX : 2633419

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	23-06-07	PAGE NO.	1 OF 4
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1. Industry (Name & Address of the organization according to form for certification) : SRI RAM POWER SYSTEMS LTD., 100 - C, GUYOG VIHAR, PH - VI, SEC-37, GURGAON - 122001
2. Industry's Reference : Y5009/02  
Dated: 22.06.2007
3. Description and identification of the Item (As Provided by the customer) :
 

I. Nomenclature	: OFF-LINE UPS-800 VA/ 12 V DC
II. Model / Type no.	: HOME UPS
III. Value / Tolerance	: -
IV. Serial No.	: Y5607094 B
V. Manufactured By	: AS ABOVE
VI. Year of Manufacture	: 2007
VII. Trade Mark	: SRI RAM
VIII. Number of Samples Submitted	: ONE ONLY

Tested by: \_\_\_\_\_ Checked by: \_\_\_\_\_ Issued By: \_\_\_\_\_  
Head (TP&C)

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	23-06-07	PAGE NO.	1 OF 4
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A. TEST RESULTS

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm 0.5$ V	Non-compliance	Safe
2)	Mains Low Cut Recovery	180 V AC $\pm 0.5$ V	Non-compliance	Safe
3)	Mains High Cut Voltage	205 V AC $\pm 0.5$ V	Non-compliance	Safe
4)	Mains High Cut Recovery	200 V AC $\pm 0.5$ V	Non-compliance	Safe
5)	Output Voltage and Output Frequency	Should be same as Input Voltage & Input Frequency	Non-compliance	Safe
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Class B sine Wave	Non-compliance	Safe
7)	Output Voltage Range	170 V AC to 200 V AC	Non-compliance	Safe
8)	Output Frequency	50.0 Hz $\pm 0.1$ Hz	Non-compliance	Safe
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa	Parasol Computer should not reboot during change over	Non-compliance	Safe
<b>D. LOAD CAPACITY</b>				
		Should be able to withstand load of 1 Computer & 3 Tubes	Non-compliance	Safe

Tested by: \_\_\_\_\_ Checked by: \_\_\_\_\_ Issued By: \_\_\_\_\_  
Head (TP&C)

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	955	DATE	23-06-07	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

3. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per industry's specifications.

Tested by: \_\_\_\_\_ Checked by: \_\_\_\_\_ Issued By: \_\_\_\_\_  
Head (TP&C)

Test Report Certificate - Page 4

# Approval & Certificates

## CHIC SERIES

Government of India  
Copyright Office  
Extracts from Register of Copyrights

Date: 23.06.2012

(C)

- Registration No. A-92123/2012
- Name, address and nationality of the applicant: SUKAM POWER SYSTEMS LTD, 54, UDYO VIHAR PHASE-6, GURGAON HARYANA, NEW DELHI - 110048 INDIA
- Name of applicant's interest in the copyright of the work: OWNER
- Class and description of the work: ARTISTIC
- Title of the work: PCB LAYOUT OF INVERTER/UPS/SMPS MARK (1500V)
- Language of the work: ENGLISH
- Name, address and nationality of the author and if the author is deceased, date of his decease: SHAMSU KUMAR SHARMA, 54/2, UDYO VIHAR PHASE-6, GURGAON
- Whether the work is published or unpublished: UNPUBLISHED
- Name and nationality of the first publisher and name, address and nationality of the publisher: NIL
- Name and nationality of subsequent publishers, if any, and name, address and nationality of the publishers: NIL
- Name, address and nationality of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any: NAME AN OOO-2 INDIA
- Name, address and nationality of other persons, if any, authorized to assign or license rights comprising the copyright: N/A
- If this work is an artistic work, the location of the original work, including name, address and nationality of the artist, in possession of a person in the case of an architectural work, the plan or design of the work should be shown: NIL
- Remarks: A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-92123/2012

FORM O-2  
Duplicate Certificate  
भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

आवक No. 821323

व्यापार चिन्ह संख्या/Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 अक्षर/Character: JHM4601

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो कि वर्ण के विषय में

यह प्रमाणपत्र जारी किया है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SUKAM POWER SYSTEMS LTD, AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYO VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9 Under No. 1634251 As of the Date 26 December 2007 in respect of Good Description Continued

अनुबद्ध  
As Annexed

(Seal of the Registrar of Trade Marks)

दिनांक/Date: 31st March 2009

(Signature of the Registrar of Trade Marks)

Registrar of Trade Marks  
Delhi

Certificate

ORIGINAL  
No. 6651

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 221692  
Date: 22/06/2012  
Respective date: 22/06/2012  
Country: India

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class..... in respect of the application of such design in..... In the name of SUKAM POWER SYSTEMS LTD, 54 UDYO VIHAR PHASE-6, GURGAON HARYANA, NEW DELHI - 110048 INDIA, AN INDIAN COMPANY.

INTELLECTUAL PROPERTY INDIA

Controller General of Patents, Designs and Trade Marks

The Controller General of Patents, Designs and Trade Marks is empowered and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

(Signature of the Controller General)

Date of issue: 22/06/2012

Patent - 221692

ORIGINAL  
No. 6657

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 221693  
Date: 22/06/2012  
Respective date: 22/06/2012  
Country: India

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class..... in respect of the application of such design in..... In the name of SUKAM POWER SYSTEMS LTD, 54 UDYO VIHAR PHASE-6, GURGAON HARYANA, NEW DELHI - 110048 INDIA, AN INDIAN COMPANY.

INTELLECTUAL PROPERTY INDIA

Controller General of Patents, Designs and Trade Marks

The Controller General of Patents, Designs and Trade Marks is empowered and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

(Signature of the Controller General)

Date of issue: 22/06/2012

Patent - 221693

# Digital Home UPS

## SHARK SERIES



### Smart Graphics Alerts



Product Code : HUP-SH-QW-012AA-00650  
HUP-SH-QW-012AA-00850

### SHARK SERIES - 650VA/12V, 850VA/12V

Shark range of systems can run all IT equipments and major appliances found in homes and offices. Shark is a star performer for home and offices. It is a two-in-one system that eliminates the need to have separate power back-up solutions for computers and other appliances. Designed to be aesthetically pleasing, it does not detract from the décor of your home or office.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Great Power Saving.
- ▶ Compatible with all type of batteries (Tubular / Flooded Lead Acid battery).
- ▶ Extra back-up for computers as compared to ordinary UPS.
- ▶ Very Fast change over time.
- ▶ Manual Static by-pass switch.
- ▶ Intelligent thermal management.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge and overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	SHARK 650VA/12V			SHARK 850VA/12V		
	A	B	C	A	B	C
Computer 150W	1	-	-	1	-	-
TV 19-21"	-	1	-	-	1	-
Tube Light 40W	2	2	-	1	3	-
Fan 48 MM	1	2	-	1	3	-
CFL 11W	3	5	28	5	5	37
<b>Back-Up Time in Hrs.</b>						
LA 135 AH	1.35	2.0	1.4	1.3	1.18	1.36
LA 150 AH	1.5	2.3	2.0	1.48	1.36	1.48
LA 200 AH	2.0	3.3	2.5	2.4	2.18	2.42

\* Recommended battery 100AH-200AH

# Digital Home UPS

## SHARK SERIES

### Technical Specifications

Model	SHARK SERIES		
Capacity	650VA/12V		850VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	290 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
SCR based charging with Soft start over full range of mains 140V to 285V ± 10V			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V	13.6V + 0.2 V	13.6 V + 0.2 V
Battery Lower Voltage Cut each Battery	10.5 V ± 0.2 V		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	272x275x122		300x300x150
Weight(Kg)	8.3		11.0

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Approval & Certificates

## SHARK SERIES

12

No: ETC/JM/173  
D: 25-06-17

**TEST REPORT**  
ON  
On Line UPS  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Mahesh Prasad (Maha Shakti) Foundation  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001  
PHONE: 0171-2511706, 2416483 TELEFAX: 2412410

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	ISSUE BY	PAGE NO. (OF 4)
				1 OF 4

1. **Industry**  
(Name & Address of the organization according to the certificate)

2. **Industry's Reference**

3. **Description and identification of the Item** (As Provided by the customer)

I. Nomenclature	OFF-LINE UPS 800 VA/12 V DC
II. Model / Type no.	HOME UPS
III. Value / Tolerance	-
IV. Serial No.	1560704 B
V. Manufactured By	AS ABOVE
VI. Year of Manufacture	2007
VII. Trade Mark	SH-KWAF
VIII. Number of Samples Submitted	ONE ONLY

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
 Head (TP&C)

Electronics Test & Development Centre  
G. T. Road, Near IOC Depot, Ambala Cantt - 133001  
Phone: 0171-2511706, 2416483

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	ISSUE BY	PAGE NO. (OF 4)
				1 OF 4

**A. TEST RESULTS**

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm 0.5$ V	Incompliance	Safe
2)	Mains Low Cut Recovery	185 V AC $\pm 0.5$ V	Incompliance	Safe
3)	Mains High Cut Voltage	265 V AC $\pm 0.5$ V	Incompliance	Safe
4)	Mains High Cut Recovery	260 V AC $\pm 0.5$ V	Incompliance	Safe
5)	Output Voltage and Output Frequency	Should be same as Input Voltage & Input Frequency	Incompliance	Safe
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Class B sine Wave	Incompliance	Safe
7)	Output Voltage Range	170 V AC to 280 V AC	Incompliance	Safe
8)	Output Frequency	50.0 Hz $\pm 0.1$ Hz	Incompliance	Safe
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa	Parasol Computer should not reboot during change over	Incompliance	Safe
<b>D. LOAD CAPACITY</b>				
		Should be able to withstand load of 1 Computer & 3 Tubes 37ans	Incompliance	Safe

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
 Head (TP&C)

Electronics Test & Development Centre  
G. T. Road, Near IOC Depot, Ambala Cantt - 133001  
Phone: 0171-2511706, 2416483

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	ISSUE BY	PAGE NO. (OF 4)
				1 OF 4

**3. Remarks (if any):**

- The report pertains only to the parameters mentioned in the test results.
- The UPS System has been tested as per industry's specifications.

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
 Head (TP&C)

Electronics Test & Development Centre  
G. T. Road, Near IOC Depot, Ambala Cantt - 133001  
Phone: 0171-2511706, 2416483

Test Report Certificate - Page 4

# Approval & Certificates

## SHARK SERIES

Government of India  
Copyright Office  
Extracts from Register of Copyrights

Date: 23.06.2012

1. Registration No.	A-92123/2012
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD. 305, 307 D, DURGAPUR, DURGAPUR, GURGAON, HARYANA, NEW DELHI - 122008 INDIA
3. Nature of applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC
5. Title of the work	POD LAYOUT OF SHARKER'S SHARKS MARK (MSO/W)
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SHARDEY KUMAR SHARMA SHARDEY COLLEGE DELHI
8. Whether the work is published or unpublished	UNPUBLISHED
9. Name and nationality of the first publisher and name, address and nationality of the publisher	NIL
10. Place and locality of subsequent publications, if any, and name, address and nationality of the publishers	NIL
11. Name, address and nationality of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	NAME AN ODI-2 DELHI
12. Name, address and nationality of other persons, if any, entitled to assign or license rights comprising the copyright	N/A
13. If this work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of it, (in the case of an architectural work, the place of completion of the work should also be shown)	NIL
14. Remarks	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT

Copy fee: ₹20000/-  
Date of Application: 30-07-2012  
Date of Receipt: 04-06-2012

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-92123/2012

FORM O-2  
Duplicate Certificate

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

अनुक्र.  
No. 821323

व्यापार चिन्ह संख्या/Trade Mark No. 1634251      दिनांक/Date: 26/12/2007      अक्षर/Character: JH4401

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो कि वर्ण के विषय में

यह प्रमाणपत्र जारी किया है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of

SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9      Under No. 1634251      as of the Date 26 December 2007      in respect of Good Description Continued

अनुक्रमित

As Annexed

दिनांक/Date: 31st March 2009

Sealed at my direction, this 31st day of March 2009

Delhi

Registrar of Trade Marks

Certificate

ORIGINAL

No. 11727

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 240266  
Date 27.10.2011  
Registration Date/Date of Copyright

Certified that the design of which a copy is annexed hereto has been registered in the register and design office design class 03/03 in respect of the application of each design to BEAT SHARK CHANNEL in the name of SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-0812, NANGAL BAFIA, NEW DELHI - 110086, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

INTELLECTUAL  
Property Office  
Controller General of Patents, Designs and Trade Marks

The registry date of entry which has been allowed and the name of the country. Copyright in the design will subsist for the term from the date of Registration, and may include renewal of the Act and Rules, as amended for a further period of five years. This Certificate is not for legal proceedings or for obtaining registration abroad.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK  
ATTORNEYS: D. BANERJEE, RAJIBAN BUTTA  
DARBEN LANE KOLKATA-700016.

Date of Issue: 01/03/2012 (2-10-0)

Patent - 240266

ORIGINAL

No. 0582

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 222838  
Date 11-07-2011  
Registration Date/Date of Copyright

Certified that the design of which a copy is annexed hereto has been registered in the register and design office design class 03/03 in respect of the application of each design to BEAT SHARK CHANNEL in the name of SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-0812, NANGAL BAFIA, NEW DELHI - 110086, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

INTELLECTUAL  
Property Office  
Controller General of Patents, Designs and Trade Marks

The registry date of entry which has been allowed and the name of the country. Copyright in the design will subsist for the term from the date of Registration, and may include renewal of the Act and Rules, as amended for a further period of five years. This Certificate is not for legal proceedings or for obtaining registration abroad.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK  
ATTORNEYS: D. BANERJEE, RAJIBAN BUTTA  
DARBEN LANE KOLKATA-700016.

Date of Issue: 01/03/2012 (2-10-0)

Patent - 222838

# Digital Home UPS

## SHARK SERIES



### Smart Graphics Alerts



**SHARK SERIES - 1500VA/24V**

Product Code : HUP-SH-QW-024AA-01500

Shark range of systems can run all IT equipments and major appliances found in homes and offices. Shark is a star performer for home and offices. It is a two-in-one system that eliminates the need to have separate power back-up solutions for computers and other appliances. Designed to be aesthetically pleasing, it does not detract from the décor of your home or office.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Great Power Saving.
- ▶ Compatible with all type of batteries (Tubular / Flooded Lead Acid battery).
- ▶ Extra back-up for computers as compared to ordinary UPS.
- ▶ Very fast change over time.
- ▶ Manual Static by-pass switch.
- ▶ Intelligent thermal management.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge and overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

## LOAD CHART, APPLICATIONS & BACK-UP TIME

SHARK 1500VA/24V			
Load Options	A	B	C
Computer 150W	1	-	-
Printer	1	-	-
TV 19-21"	-	1	-
Tube Light 40W	4	6	-
Fan 48 MM	4	6	-
CFL 11W	-	9	60
<b>Back-Up Time in Hrs.</b>			
LA 135 AH	1.36	1.10	1.48
LA 150 AH	1.45	1.36	2.12
LA 200 AH	2.30	2.10	3.0

\* Recommended battery 100AH - 200AH

# Digital Home UPS

## SHARK SERIES

### Technical Specifications

<b>Model</b>	SHARK SERIES		
<b>Capacity</b>	1500VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	290 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>SCR based charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Voltage Cut each Battery	10.5 V ± 0.2 V (Load dependent)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x289x169		
Weight(Kg)	16.2		

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

35  
 No. - ETDC/AVS/116  
 Dt. - 28-08-2007

**TEST REPORT**  
 ON  
Off Line UPS-1500VA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Unit of Power Electronics Technology  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001  
 TEL NO. : 0171-251374, 2513994 Fax: 2513478

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	996	DATE	28-08-07	PAGE NO.	1 OF 4
--------------------------------------	-----	------	----------	----------	--------

1. Indentor (Name & Address of the organization sending items for calibration) : SUKAM POWER SYSTEMS LTD., 196 - C, UDYOG VIHAR, PH - IV, SEC-37 GURGAON - 122001
2. Indentor's Reference : 152129-05 Dated: 20.08.2007
3. Description and identification of the Item (As Provided by the Indentor) :
  - I. Nomenclature : OFF LINE UPS 1500 VA / 24 V DC
  - II. Model / Type-nd : HOME UPS - TRUSTY
  - III. Value / Tolerance : -
  - IV. Serial No. : 150037109 D
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SUKAM
  - VIII. Number of Samples Submitted : ONE ONLY.

Tested by

Checked by

Issued By  
 Head (TP&C)

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	996	DATE	28-08-07	PAGE NO.	2 OF 4
--------------------------------------	-----	------	----------	----------	--------

4. TEST RESULTS

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm$ 5 V	Incompliance	Satisfy
2)	Mains Low Cut Recovery	190 V AC $\pm$ 5 V	Incompliance	Satisfy
3)	Mains High Cut Voltage	265 V AC $\pm$ 0 V	Incompliance	Satisfy
4)	Mains High Cut Recovery	250 V AC $\pm$ 5 V	Incompliance	Satisfy
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satisfy
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Quasi Sine Wave	Incompliance	Satisfy
7)	Output Voltage Range	180 V AC to 250 V AC	Incompliance	Satisfy
8)	Output Frequency	50.0 Hz $\pm$ 0.1 Hz	Incompliance	Satisfy
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice - versa	Personal Computer should not reboot during change over	Incompliance	Satisfy
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer + 7 Tubes + 7 Fans	Incompliance	Satisfy

Tested by

Checked by

Issued By  
 Head (TP&C)

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	996	DATE	28-08-07	PAGE NO.	3 OF 4
--------------------------------------	-----	------	----------	----------	--------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications

Tested by

Checked by

Issued By  
 Head (TP&C)

Test Report Certificate - Page 4

# Approval & Certificates

## SHARK SERIES

Government of India  
Copyright Office  
Extracts from Register of Copyrights

Date: 23.06.2012

1. Registration No.	A-92123/2012
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD. 345, 54/11, UDYOOG VIHAR, GURGAON, HARYANA, NEW DELHI - 122008 INDIA
3. Nature of applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC
5. Title of the work	POD LAYOUT OF SHARKERHARSHARU MARK (TM/LOGO)
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SHARDESH KUMAR SHARMA SHARDESH COLLEGE DELHI
8. Whether the work is published or unpublished	UNPUBLISHED
9. Title and nationality of the first publisher and name, address and nationality of the publisher	NIL
10. Title and nationality of subsequent publishers, if any, and name, address and nationality of the publishers	NIL
11. Name, address and nationality of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	NAME AN ODI-2 DELHI
12. Name, address and nationality of other persons, if any, entitled to assign or license of rights comprising the copyright	N/A
13. If this work is an artistic work, the location of the original work, including name, address and nationality of the artist, if a possessor of it, (in the case of an architectural work, the place of completion of the work should also be shown)	NIL
14. Remarks	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-92123/2012

FORM NO. 2  
FORM O-2

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

फॉर्म नं. 821323

व्यापार चिन्ह संख्या/Trade Mark No. 1634251      दिनांक/Date: 26/12/2007      अक्षर/Class: JIM4601

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण प्रमाणपत्र प्राप्त है, जो कि वर्ण के संकेत

वर्ण के संकेत/Trade Mark के संकेत

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of  
**SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)**

In Class 9      Under No. 1634251      as of the Date 26 December 2007      in respect of  
Good Description Continued

अनुबद्ध है  
As Annexed

DEPUTY REGISTRAR OF TRADE MARKS

दिनांक/Date: 31st March 2009

Sealed in my direction, this 31st day of March 2009

DEPUTY REGISTRAR OF TRADE MARKS

Certificate

ORIGINAL

No. 11727

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 240266  
Date 27/10/2011  
Registration Date/Date of Registration

Certified that the design of which a copy is annexed hereto has been registered in the name and address of the applicant as follows: **SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-5812, NANGAL BATA, NEW DELHI - 110064, INDIA, AN INDIAN COMPANY.**

In pursuance of and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

INTELLECTUAL  
PROPERTY OFFICE  
Controller General of Patents, Designs and Trade Marks

The registerable date of a design which has been allowed and the name of the owner of the design, as entered in the register, are recorded for the sake of the public, and any mistake therein of the Controller General of Patents, Designs and Trade Marks, shall not be a ground for setting aside the registration of the design.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK ATTORNEYS, 22, BAKSHI SAHIBAN BUTTA GARDEN LANE, KOLKATA-700016.  
Date of Issue: 01/03/2012 12:58:0

Patent - 240266

ORIGINAL

No. 126311

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CENTRAL OFFICE OF REGISTRATION OF DESIGN

Design No. 236528  
Date 27/10/2011  
Registration Date/Date of Registration

Certified that the design of which a copy is annexed hereto has been registered in the name and address of the applicant as follows: **SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-5812, NANGAL BATA, NEW DELHI - 110064, INDIA, AN INDIAN COMPANY.**

In pursuance of and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

INTELLECTUAL  
PROPERTY OFFICE  
Controller General of Patents, Designs and Trade Marks

The registerable date of a design which has been allowed and the name of the owner of the design, as entered in the register, are recorded for the sake of the public, and any mistake therein of the Controller General of Patents, Designs and Trade Marks, shall not be a ground for setting aside the registration of the design.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK ATTORNEYS, 22, BAKSHI SAHIBAN BUTTA GARDEN LANE, KOLKATA-700016.  
Date of Issue: 01/03/2012 12:58:0

Patent - 236528

# Digital Home UPS

## SHARK SERIES



### Smart Graphics Alerts



**SHARK SERIES - 2500VA/48V**

Product Code : HUP-SH-QW-048AA-02500

Shark range of systems can run all IT equipments and major appliances found in homes and offices. Shark is a star performer for home and offices. It is a two-in-one system that eliminates the need to have separate power back-up solutions for computers and other appliances. Designed to be aesthetically pleasing, it does not detract from the décor of your home or office.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Great Power Saving.
- ▶ Compatible with all type of batteries (Tubular / Flooded Lead Acid battery).
- ▶ Extra back-up for computers as compared to ordinary UPS.
- ▶ Very fast change over time.
- ▶ Manual Static by-pass switch.
- ▶ Intelligent thermal management.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge and overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

## LOAD CHART, APPLICATIONS & BACK-UP TIME

SHARK 2500VA/48V			
Load Options	A	B	C
Computer 150W	-	8	-
Printer	-	1	-
TV 19-21"	-	-	2
Tube Light 40W	3	-	10
Fan 48 MM	-	-	10
CFL 11W	6	4	8
Photocopier	1	-	-
<b>Back-Up Time in Hrs.</b>			
LA 135 AH	2.10	2.0	2.18
LA 150 AH	2.40	2.18	2.36
LA 200 AH	3.40	3.20	3.48

\* Recommended battery 100AH - 200AH

# Digital Home UPS

## SHARK SERIES

### Technical Specifications

<b>Model</b>	SHARK SERIES		
<b>Capacity</b>	2500VA/48V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>SCR based charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current		10 ± 2.0 Amp	
Charging Boost Voltage each Battery	14.2V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery		13.6V + 0.2 V	
Battery Lower Voltage Cut each Batt.	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x385x170		
Weight(Kg)	22.5		

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.



# Approval & Certificates

## SHARK SERIES

Government of India  
Copyright Office  
Extracts from Register of Copyrights

Date: 23.06.2012

1. Registration No.	A-92123/2012
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD. 345, 54/1, UDYOOG VIHAR, GURGAON, HARYANA, NEW DELHI - 122008 INDIA
3. Nature of applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC
5. Title of the work	POD LAYOUT OF SHARKSERIES SHARK (BOOK)
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SHARDESH KUMAR SHARMA SHARDESH COLONY DELHI
8. Whether the work is published or unpublished	UNPUBLISHED
9. Title and nationality of the first publisher and name, address and nationality of the publisher	NIL
10. Title and nationality of subsequent publishers, if any, and name, address and nationality of the publishers	NIL
11. Name, address and nationality of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	NAME AN ODI-2 DELHI
12. Name, address and nationality of other persons, if any, entitled to assign or license of rights comprising the copyright	N/A
13. If this work is an artistic work, the location of the original work, including name, address and nationality of the artist, if possessor of it, (in the case of an architectural work, the place of completion of the work should also be shown)	NIL
14. Remarks	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-92123/2012

FORM D-2  
Duplicate Certificate

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिह्न रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिह्न अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिह्न के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

आवक  
No. 821323

आवक संख्या/Trade Mark No. 1634251      दिनांक/Date: 26/12/2007      अंश/Class: 34/401

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिह्न की रजिस्ट्रीकरण प्रमाणपत्र प्राप्त है, जो कि वर्ण के द्वारा

आवक के प्रतिनिधित्व की पूर्ण है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of  
SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 34 Under No. 1634251 of the Date 26 December 2007 in respect of  
Good Description Continued

आवक द्वारा  
As Annexed

REGISTRAR OF TRADE MARKS

दिनांक/Date: 31st March 2009

Sealed in my direction, this 31st day of March 2009

REGISTRAR OF TRADE MARKS

Certificate

ORIGINAL  
No. 11727

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 240266  
Date 27/10/2011  
Registration Date/Date of Registration

Certified that the design of which a copy is annexed hereto has been registered in the register and date of registration of this design is 27/10/2011 in respect of the application of each design in the name of SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-5812, NANGAL BAFIA, NEW DELHI - 110064, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

INTELLECTUAL  
Property  
Controller General of Patents, Designs and Trade Marks

The registerable date of a design which has been allowed and the name of the designer. Copyright in the design will subsist for the years from the date of Registration, and any material breach of the Act and Rules, be considered for a further period of three years. This Certificate is not for a legal proceeding or for obtaining registration abroad.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK  
ATTORNEYS: U. SARKAR, RAJIBAN BUTTA  
DARBEN LANE KOLKATA-700016.

Date of Issue: 01/03/2012 12:58:0

Patent - 240266

ORIGINAL  
No. 12631

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CENTRAL OFFICE OF REGISTRATION OF DESIGN

Design No. 236528  
Date 27/10/2011  
Registration Date/Date of Registration

Certified that the design of which a copy is annexed hereto has been registered in the register and date of registration of this design is 27/10/2011 in respect of the application of each design in the name of SU-KAM POWER SYSTEMS LTD. OF PGAT NO. WZ-5812, NANGAL BAFIA, NEW DELHI - 110064, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

INTELLECTUAL  
Property  
Controller General of Patents, Designs and Trade Marks

The registerable date of a design which has been allowed and the name of the designer. Copyright in the design will subsist for the years from the date of Registration, and any material breach of the Act and Rules, be considered for a further period of three years. This Certificate is not for a legal proceeding or for obtaining registration abroad.

DR. J. BANERJEE,  
E. S. DASVAR & CO. PATENT & TRADE MARK  
ATTORNEYS: U. SARKAR, RAJIBAN BUTTA  
DARBEN LANE KOLKATA-700016.

Date of Issue: 01/03/2012 12:58:0

Patent - 236528

# Digital Home UPS

## TORQUE SERIES



### Smart Graphics Alerts



Product Code : HUP-TQ-QW-012AA-00650  
HUP-TQ-QW-012AA-00850

### TORQUE SERIES - 650VA/12V, 850VA/12V

A home UPS that packs a powerful punch! Traditionally, you've used a UPS to run your computer, printer, modem, router and other IT equipments, and a separate inverter for your lights, fans and other home appliances.

Now, you only need one mighty machine Su-Kam's Torque Digital Home UPS systems. Powerful and sensitive at the same time, Torque will run all your IT equipments and electrical appliances single handedly, smoothly, without a break.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Longer Battery Life.
- ▶ Manual Static Bypass switch.
- ▶ Intelligent thermal management.
- ▶ High-end Micro Controller based design.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

### Electronic Protection updates

- ▶ Thermal shutdown protection in case of fault.
- ▶ HCLC protection for fluctuations in main supply.
- ▶ Over Charging current / voltage protection in charger.
- ▶ High surge handling capability up to 300% for heavy load.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	TORQUE 650VA/12V			TORQUE 850VA/12V		
	A	B	C	A	B	C
Computer 150W	1	-	-	1	-	-
TV 19-21"	-	1	-	-	1	-
Tube Light 40W	2	2	-	1	3	-
Fan 48 MM	1	2	-	1	3	-
CFL 11W	3	5	28	5	5	37
<b>Back-Up Time in Hrs.</b>						
LA 135 AH	1.35	2.0	1.4	1.3	1.18	1.36
LA 150 AH	1.5	2.3	2.0	1.48	1.36	1.48
LA 200 AH	2.0	3.3	2.5	2.4	2.18	2.42

\* Recommended battery 100AH-200AH

# Digital Home UPS

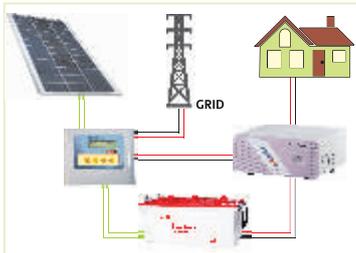
## TORQUE SERIES

### Technical Specifications

Model	TORQUE SERIES		
Capacity	650VA/12V		850VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	272x275x122		301x302x128
Weight(Kg)	8.3		9.0

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-1000VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping
- ▶



# Approval & Certificates

## TORQUE SERIES

No. ETDC-AMB-173  
01/12/2017

**TEST REPORT**  
ON  
Off Line UPS  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	953	DATE	28-12-17	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

1. **Industry**  
(Name & Address of the organization according to the certificate)  
: SRI RAM POWER SYSTEMS LTD.,  
100 - C, UDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. **Industry's Reference**  
: Y5009.02  
Dated: 22.06.2007
3. **Description and identification of the Item** (As Provided by the customer):
 

I. Nomenclature	: OFF-LINE UPS 800 VA/ 12 V DC
II. Model / Type no.	: HD06 UPS
III. Value / Tolerance	: -
IV. Serial No.	: Y5007094 B
V. Manufactured By	: AS ABOVE
VI. Year of Manufacture	: 2007
VII. Trade Mark	: SRI RAM
VIII. Number of Samples Submitted	: ONE ONLY

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	953	DATE	28-12-17	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

**A. TEST RESULTS**

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm 0.5$ V	185 V AC	Non-compliance
2)	Mains Low Cut Recovery	185 V AC $\pm 0.5$ V	185 V AC	Non-compliance
3)	Mains High Cut Voltage	265 V AC $\pm 0.5$ V	265 V AC	Non-compliance
4)	Mains High Cut Recovery	265 V AC $\pm 0.5$ V	265 V AC	Non-compliance
5)	Output Voltage and Output Frequency	Should be same as Input Voltage & Input Frequency	230 V AC / 50 Hz	Non-compliance
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Class B sine Wave	Class D sine Wave	Non-compliance
7)	Output Voltage Range	170 V AC to 280 V AC	170 V AC to 280 V AC	Non-compliance
8)	Output Frequency	50.0 Hz $\pm 0.1$ Hz	50.0 Hz	Non-compliance
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa	Parasol Computer should not reboot during change over	Parasol Computer rebooted during change over	Non-compliance
<b>D. LOAD CAPACITY</b>				
		Should be able to withstand load of 1 Computer & 5 Tubes 37ans	1 Computer & 5 Tubes 37ans	Non-compliance

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	953	DATE	28-12-17	PAGE NO.	1 OF 4
------------------------------------	-----	------	----------	----------	--------

**3. Remarks (if any):**

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per industry's specifications.

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 4

# Approval & Certificates

## TORQUE SERIES

Copyright Office Page 2 of 3

  
**Government Of India**  
**Copyright Office**  
**Extract from the Register of**  
**Copyrights** ©  
 Dated :15/4/2013

1. Registration Number : **A-99531/2013**

2. Name, address and nationality of the applicant : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

3. Nature of the applicant's interest in the copyright of the work : **OWNER**

4. Class and description of the work : **ARTISTIC WORK**

5. Title of the work : **HEAT SINK CHANNEL**

6. Language of the work : **ADL**

7. Name, address and nationality of the author and if the author is deceased, date of his decease : **SARJEEV KUMAR SAINI, 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

8. Whether the work is published or unpublished : **UNPUBLISHED**

9. Year and country of first publication and name, address and nationality of the publisher : **N.A.**

10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers : **N.A.**

11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIAN**

12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright : **N.A.**

13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of the work. In the case of an architectural work, the year of completion of the work should also be stated. : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

14. Remarks, if any : **A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.**

Diary Number : 1150/2011-CO/A  
 Date of Application : 27/09/2011  
 Date of Receipt : 27/09/2011

  
 DEPUTY REGISTRAR OF COPYRIGHTS



Certificate - A-99531

Form No. 2  
 FORM O-2

  
**भारत सरकार**  
**GOVERNMENT OF INDIA**  
**व्यापार चिन्ह रजिस्ट्री**  
**TRADE MARKS REGISTRY** आदेश No. 821323

**व्यापार चिन्ह अधिनियम, 1999**  
**Trade Marks Act, 1999**  
**व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)**  
**Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

आदेश संख्या/Trade Mark No. **1634251** दिनांक/Date: **26/12/2007** अंश संख्या/Part No. **JM/461**

यह प्रमाणपत्र तब तक वैध है कि जिस प्रकार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, यह कि यह है कि चिन्ह

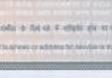
**As Annexed**



मेरे दिशा में जारी है कि जिस प्रकार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, यह कि यह है कि चिन्ह

Based in my direction, this **31st** March, 2008 day of

  
 Registrar of Trade Marks



Certificate

  
**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
 No. **9424**

Design No. **233462**  
 Date: **23/02/2008**  
 Reciprocity Date\*  
 Country:



**INTELLECTUAL**  
 Copyrights Division of Patents, Designs and Trade Marks

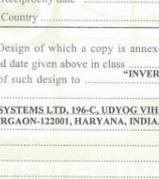
**DE. S. BANERJEE,**  
**L. S. DAVAR & CO., PATENT & TRADE MARK**  
**ATTORNEYS AT LAW, RADHA MADHAB DUTTA**  
**GARDEN LANE, KOLKATA - 700016.**  
 Date of Issue: 10/04/2008 10:24:53

Patent - 233462

  
**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
 No. **1219**

Design No. **203751**  
 Date: **31 MARCH 2006**  
 Reciprocity date\*  
 Country:



**INTELLECTUAL**  
 Copyrights Division of Patents, Designs and Trade Marks

**L. S. DAVAR & CO.**  
**32, RADHA MADHAB DUTTA GARDEN LANE,**  
**KOLKATA-700016.**  
 Date of issue: **10<sup>th</sup> AUGUST 2006.**

Patent - 203751

# Digital Home UPS

## TORQUE SERIES



### Smart Graphics Alerts



Product Code : HUP-TQ-QW-012AA-01000

### TORQUE SERIES - 1000VA/12V

A Home UPS that packs a powerful punch! Traditionally, you've used a UPS to run your computer, printer, modem, router and other IT equipments, and a separate inverter for your lights, fans and other home appliances.

Now, you only need one mighty machine, Su-Kam's Torque Digital Home UPS systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product Features

- ▶ Longer Battery Life.
- ▶ Manual Static Bypass switch.
- ▶ Intelligent thermal management.
- ▶ High-end Micro Controller based design.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

### Electronic Protection updates

- ▶ Thermal shutdown protection in case of fault.
- ▶ Mains Fuse protection in case of short circuit.
- ▶ HCLC protection for fluctuations in main supply.
- ▶ Over Charging current / voltage protection in charger.
- ▶ High surge handling capability up to 300% for heavy load.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode,
- ▶ state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

TORQUE 1000VA/12V			
Load Options	A	B	C
Computer 150W	1	-	-
TV 19-21"	-	1	-
Tube Light 40W	3	3	5
Fan 48 MM	3	3	4
CFL 11W	4	5	4
<b>Back-Up Time in Hrs.</b>			
LA 135 AH	1.0	1.0	0.54
LA 150 AH	1.18	1.18	1.10
LA 200 AH	1.48	2.0	1.42

\* Recommended battery 100AH - 200AH

# Digital Home UPS

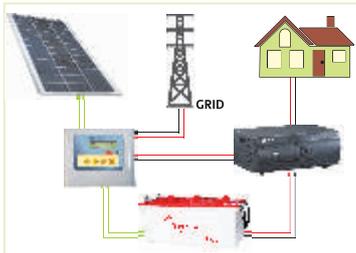
## TORQUE SERIES

### Technical Specifications

<b>Model</b>	TORQUE SERIES		
<b>Capacity</b>	1000VA/12V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	395 x 306 x 168		
Weight(Kg)	13.45		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-1000VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



# Approval & Certificates

## TORQUE SERIES

No. **ETDC-AMB-173**  
01/12/2017

**TEST REPORT**  
ON  
Off Line UPS  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

R.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 0171-2011744, 3010366, TELEFAX : 3210410

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	PAGE NO.
			1 OF 4

1. **Industry**  
(Name & Address of the organization according to the certificate)  
: BIL-KAM POWER SYSTEMS LTD.,  
100 - C, UDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. **Industry's Reference**  
: Y5009.02  
Dated: 22.06.2007
3. **Description and identification of the Item** (As Provided by the customer):
 

I. Nomenclature	: OFF-LINE UPS 800 VA/ 12 V DC
II. Model / Type no.	: HD06 UPS
III. Value / Tolerance	: -
IV. Serial No.	: Y5007094 B
V. Manufactured By	: AS ABOVE
VI. Year of Manufacture	: 2007
VII. Trade Mark	: BIL-KAM
VIII. Number of Samples Submitted	: ONE ONLY

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	PAGE NO.
			1 OF 4

A. **TEST RESULTS**

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm 0.5$ V	185 V AC	Non-compliance
2)	Mains Low Cut Recovery	185 V AC $\pm 0.5$ V	185 V AC	Non-compliance
3)	Mains High Cut Voltage	265 V AC $\pm 0.5$ V	265 V AC	Non-compliance
4)	Mains High Cut Recovery	265 V AC $\pm 0.5$ V	265 V AC	Non-compliance
5)	Output Voltage and Output Frequency	Should be same as Input Voltage & Input Frequency	230 V AC / 50 Hz	Non-compliance
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Class B sine Wave	Class B sine Wave	Non-compliance
7)	Output Voltage Range	170 V AC to 280 V AC	170 V AC to 280 V AC	Non-compliance
8)	Output Frequency	50.0 Hz $\pm 0.1$ Hz	50.0 Hz	Non-compliance
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa	Parasol Computer should not reboot during change over	Parasol Computer did not reboot during change over	Non-compliance
<b>D. LOAD CAPACITY</b>				
		Should be able to withstand load of 1 Computer & 5 Tubes 37ans	1 Computer & 5 Tubes 37ans	Non-compliance

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER (ETDC/CANTT)	REV	DATE	PAGE NO.
			1 OF 4

3. **Remarks (if any):**

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per industry's specifications.

Tested by: \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
 Issued By: \_\_\_\_\_  
 Head (TP&C)

Test Report Certificate - Page 4

# Approval & Certificates

## TORQUE SERIES

Copyright Office Page 2 of 3

Government Of India  
Copyright Office  
Extract from the Register of Copyrights

Dated :15/4/2013

1. Registration Number : **A-99531/2013**

2. Name, address and nationality of the applicant : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

3. Nature of the applicant's interest in the copyright of the work : **OWNER**

4. Class and description of the work : **ARTISTIC WORK**

5. Title of the work : **HEAT SINK CHANNEL**

6. Language of the work : **ADL**

7. Name, address and nationality of the author and if the author is deceased, date of his decease : **SARJEEV KUMAR SAINI, 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

8. Whether the work is published or unpublished : **UNPUBLISHED**

9. Year and country of first publication and name, address and nationality of the publisher : **N.A.**

10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers : **N.A.**

11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIAN**

12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright : **N.A.**

13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of the work. In the case of an architectural work, the year of completion of the work should also be stated. : **SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA**

14. Remarks, if any : **A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.**

Diary Number : 1150/2011-CO/A  
Date of Application : 27/09/2011  
Date of Receipt : 27/09/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-99531

Form No. 2 FORM O-2

Duplicate Certificate

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY

व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999

व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

व्यापार चिन्ह संख्या/Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 न. क्र./No. JH/4601

यह प्रमाणपत्र सिद्ध करेगा कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण प्रमाणपत्र है, जो निम्न की दिशा में है: **व्यापार चिन्ह रजिस्ट्रीकरण की प्रमाणपत्र है।**

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of **SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOG VIHAR PHASE-II GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)**

In Class **9** Under No. **1634251** as of the Date **December 2007** in respect of **Good Description Continued**

As Annexed

Based in my direction, this **31st** day of **March, 2008** at **Delhi**

Registrar of Trade Marks

Certificate

ORIGINAL

No. 9424

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 233462  
Date: 23/02/2008  
Reciprocity Date\*  
Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 12-02 in pursuance of the application of such design to **INVERTER TROLLEY** in the name of **SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 106-10112, NANGAL KAYA, NEW DELHI-110046 INDIA, AN INDIAN COMPANY.**

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

INTELLECTUAL  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of registration, and five years under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. L. BANERJEE,  
L. S. DAVAR & CO., PATENT & TRADE MARK  
ATTORNEYS AT LAW, RADHA MADHAB DUTTA  
GARDEN LANE, KOLKATA - 700016.  
Date of Issue: 10/04/2008 10:24:53

Patent - 233462

ORIGINAL

No. 1219

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 203751  
Date: 31 MARCH 2006  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class **12-02** in respect of the application of such design to **"INVERTER TROLLEY"** in the name of **SU-KAM POWER SYSTEMS LTD, 196-C, UDYOG VIHAR, PHASE-VI, SECTOR-37, PACE CITY-II, GURGAON-122001, HARYANA, INDIA, AN INDIAN COMPANY.**

in pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAVAR & CO.  
32, RADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700016.  
Date of Issue: 10<sup>th</sup> AUGUST 2006.

Patent - 203751

# Digital Home UPS

## TORQUE SERIES



### Smart Graphics Alerts



### TORQUE SERIES - 1500VA/24V

Product Code : HUP-TQ-QW-024AA-01500

A Home UPS that packs a powerful punch! Traditionally, you've used a UPS to run your computer, printer, modem, router and other IT equipments, and a separate inverter for your lights, fans and other home appliances.

Now, you only need one mighty machine, Su-Kam's Torque Digital Home UPS systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product Features

- ▶ Longer Battery Life.
- ▶ Manual Static Bypass switch.
- ▶ Intelligent thermal management.
- ▶ High-end Micro Controller based design.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

#### Electronic Protection updates

- ▶ Thermal shutdown protection in case of fault.
- ▶ Mains Fuse protection in case of short circuit.
- ▶ HCLC protection for fluctuations in main supply.
- ▶ Over Charging current / voltage protection in charger.
- ▶ High surge handling capability up to 300% for heavy load.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode,
- ▶ state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

TORQUE 1500VA/24V			
Load Options	A	B	C
Computer 150W	1	-	-
Printer	1	-	-
TV 19-21"	-	1	-
Tube Light 40W	4	6	-
Fan 48 MM	4	6	-
CFL 11W	-	9	60
<b>Back-Up Time in Hrs.</b>			
LA 135 AH	1.36	1.10	1.48
LA 150 AH	1.45	1.36	2.12
LA 200 AH	2.30	2.10	3.0

\* Recommended battery 100AH - 200AH

# Digital Home UPS

## TORQUE SERIES

### Technical Specifications

<b>Model</b>	TORQUE SERIES		
<b>Capacity</b>	1500VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
FLC based SCR charging with Soft start over full range of mains 130V to 285V ± 10V			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	395 x 306 x 168		
Weight(Kg)	17.2		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

# Approval & Certificates

## TORQUE SERIES

No. - ETDC/AVB/TP&C  
Dt. 25-08-20

**TEST REPORT**

ON  
Off Line UPS-1KVA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Unit of Power Electronics Technology

G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001  
PHONE : 0171-251374, 251399A Fax: 2513478

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	936	DATE 25-08-20	PAGE NO. 1 OF 4
--------------------------------------	-----	------------------	--------------------

1. Indentor (Name & Address of the organization sending items for calibration) : SUKAM POWER SYSTEMS LTD., 196 - C, UDYOG VIHAR, PH - IV, SEC-37 GURGAON - 122001
2. Indentor's Reference : 152129-05 Dated: 20.08.2007
3. Description and identification of the Item (As Provided by the Indentor) :
  - I. Nomenclature : OFF LINE UPS 1KVA VA/24 V DC
  - II. Model / Type-nd : HOME UPS - TRUSTY
  - III. Value / Tolerance : -
  - IV. Serial No. : 150037109 D
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SUKAM
  - VIII. Number of Samples Submitted : ONE ONLY.

Tested by:      Checked by:      Issued By:   
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot, Ambala Cantt-133001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	936	DATE 25-08-20	PAGE NO. 2 OF 4
--------------------------------------	-----	------------------	--------------------

4. TEST RESULTS

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm$ 5 V	Incompliance	Satisfy
2)	Mains Low Cut Recovery	190 V AC $\pm$ 5 V	Incompliance	Satisfy
3)	Mains High Cut Voltage	265 V AC $\pm$ 0 V	Incompliance	Satisfy
4)	Mains High Cut Recovery	250 V AC $\pm$ 5 V	Incompliance	Satisfy
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satisfy
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Quasi Sine Wave	Incompliance	Satisfy
7)	Output Voltage Range	180 V AC to 250 V AC	Incompliance	Satisfy
8)	Output Frequency	50.0 Hz $\pm$ 0.1 Hz	Incompliance	Satisfy
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice - versa	Personal Computer should not reboot during change over	Incompliance	Satisfy
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer + 7 Tubes + 7 Fans	Incompliance	Satisfy

Tested by:      Checked by:      Issued By:   
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot, Ambala Cantt-133001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT)	936	DATE 25-08-20	PAGE NO. 3 OF 4
--------------------------------------	-----	------------------	--------------------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications

Tested by:      Checked by:      Issued By:   
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot, Ambala Cantt-133001

Test Report Certificate - Page 4

# Approval & Certificates

## TORQUE SERIES

Copyright Office Page 2 of 3

  
**Government Of India**  
**Copyright Office**  
**Extract from the Register of**  
**Copyrights** ©  
 Dated :15/4/2013

1. Registration Number	: A-99531/2013
2. Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
3. Nature of the applicant's interest in the copyright of the work	: OWNER
4. Class and description of the work	: ARTISTIC WORK
5. Title of the work	: HEAT SINK CHANNEL
6. Language of the work	: ADL
7. Name, address and nationality of the author and if the author is deceased, date of his decease	: SAKHDEV KUMAR SAINI, 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
8. Whether the work is published or unpublished	: UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	: N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	: N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright	: N.A.
13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of the work. In the case of an architectural work, the year of completion of the work should also be stated.	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
14. Remarks, if any	: A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 11550/2011-CO/A  
 Date of Application : 27/09/2011  
 Date of Receipt : 27/09/2011

  
 DEPUTY REGISTRAR OF COPYRIGHTS



Certificate - A-99531

Form No. 2  
 FORM O-2

  
**भारत सरकार**  
**GOVERNMENT OF INDIA**  
**व्यापार चिन्ह रजिस्ट्री**  
**TRADE MARKS REGISTRY** अनुक्र. No. 821323

**व्यापार चिन्ह अधिनियम, 1999**  
**Trade Marks Act, 1999**  
**व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)**  
**Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

पंजीकृत चिन्ह संख्या/Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 अनुक्र. JTM/4601

यह प्रमाणपत्र सिद्ध करेगा कि निम्न उल्लिखित चिन्ह को संपूर्णतः प्रमाणित करने के लिए, यह कि यह चिन्ह

As Annexed



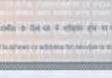
As Annexed

in Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

दिनांक/Date: 26/12/2007

Based in my direction, this 31st day of March 2009

  
 Registrar of Trade Marks

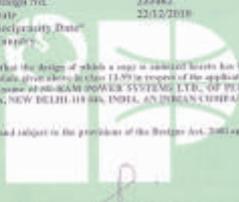


Certificate

  
**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
 No. 9424

Design No. 233462  
 Date: 23/02/2011  
 Reciprocity Date:   
 Country:   
 Inventor:   
 Assignee:   
 Licensee:   
 Priority Date:   
 Priority Country:   
 Priority No.:



**INTELLECTUAL**  
**PROPERTY INDIA**  
 Controller General of Patents, Designs and Trade Marks

The reciprocity date of 2011 which has been entered and the name of the country. Copyright in the design if valid for ten years from the date of registration, and has under the terms of the Act and Rules, to be available for a further period of five years. This Certificate is valid for the legal protection of the aforesaid registration abroad.

DR. I. BANERJEE,  
 L. A. BAYAL & CO., PATENT & TRADE MARK  
 ATTORNEYS AT BAR, WARDHARI BUTTA  
 GARDEN LANE, KOLKATA-700009.

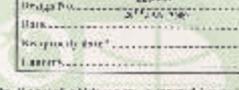
Date of Issue: 10/04/2011 10:25:53

Patent - 233462

  
**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
 No. 5270

Design No. 220866  
 Date: 27/02/2011  
 Reciprocity Date:   
 Country:   
 Inventor:   
 Assignee:   
 Licensee:   
 Priority Date:   
 Priority Country:   
 Priority No.:



**INTELLECTUAL**  
**PROPERTY INDIA**  
 Controller General of Patents, Designs and Trade Marks

The reciprocity date of 2011 which has been entered and the name of the country. Copyright in the design if valid for ten years from the date of registration, and has under the terms of the Act and Rules, to be available for a further period of five years. This Certificate is valid for the legal protection of the aforesaid registration abroad.

DR. I. BANERJEE,  
 L. A. BAYAL & CO., PATENT & TRADE MARK  
 ATTORNEYS AT BAR, WARDHARI BUTTA  
 GARDEN LANE, KOLKATA-700009.

Date of Issue: 10/04/2011 10:25:53

Patent - 220866

# Digital Home UPS

## TORQUE SERIES



### Smart Graphics Alerts



### TORQUE SERIES - 2000VA/24V

Product Code : HUP-TQ-QW-024AA-02000

A Home UPS that packs a powerful punch! Traditionally, you've used a UPS to run your computer, printer, modem, router and other IT equipments, and a separate inverter for your lights, fans and other home appliances.

Now, you only need one mighty machine, Su-Kam's Torque Digital Home UPS systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product Features

- ▶ Longer Battery Life.
- ▶ Manual Static Bypass switch.
- ▶ Intelligent thermal management.
- ▶ High-end Micro Controller based design.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

### Electronic Protection updates

- ▶ Thermal shutdown protection in case of fault.
- ▶ Mains Fuse protection in case of short circuit.
- ▶ HCLC protection for fluctuations in main supply.
- ▶ Over Charging current / voltage protection in charger.
- ▶ High surge handling capability up to 300% for heavy load.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode,
- ▶ state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

TORQUE 2000VA/24V			
Load Options	A	B	C
Computer 150W	-	-	-
Printer	-	-	-
TV 19-21"	-	2	1
Tube Light 40W	8	8	10
Fan 48 MM	8	8	10
CFL 11W	8	10	16
<b>Back-Up Time in Hrs.</b>			
LA 135 AH	1.0	1.0	0.54
LA 150 AH	1.18	1.18	1.10
LA 200 AH	1.48	2.0	1.4

\* Recommended battery 100AH - 200AH

# Digital Home UPS

## TORQUE SERIES

### Technical Specifications

<b>Model</b>	TORQUE SERIES		
<b>Capacity</b>	2000VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	395 x 306 x 168		
Weight(Kg)	18.84		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

# Approval & Certificates

## TORQUE SERIES

No. - ETDC/AVS/196  
Dt. 28-08-2007

**TEST REPORT**  
ON  
Off Line UPS-1900VA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A TORQUE POWER SYSTEMS UNIT Technology  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001  
PHONE : 0171-251374, 2513994 Fax: 0171-2513478

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	936	DATE	28-08-07	PAGE NO.	1 OF 4
---------------------------------------	-----	------	----------	----------	--------

1. Indentor (Name & Address of the organization sending items for calibration)

SURAM POWER SYSTEMS LTD.,  
196 - C, UDYOG VIHAR,  
PH - IV, SEC-37  
GURGAON - 122001

2. Indentor's Reference: 152129-05  
Dated: 20.08.2007

3. Description and identification of the Item (As Provided by the Indentor)

I. Nomenclature: OFF LINE UPS 1900 VA / 24 V DC  
II. Model / Type-nd: HOME UPS - TRUSTY  
III. Value / Tolerance: -  
IV. Serial No: 150037029 D  
V. Manufactured By: AS ABOVE  
VI. Year of Manufacture: 2007  
VII. Trade Mark: SURAM  
VIII. Number of Samples Submitted: ONE ONLY.

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	936	DATE	28-08-07	PAGE NO.	2 OF 4
---------------------------------------	-----	------	----------	----------	--------

4. TEST RESULTS

Sl. NO.	PARAMETER	NOMINAL VALUE / REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC $\pm$ 5 V	Incompliance	Satisfy
2)	Mains Low Cut Recovery	190 V AC $\pm$ 5 V	Incompliance	Satisfy
3)	Mains High Cut Voltage	205 V AC $\pm$ 0 V	Incompliance	Satisfy
4)	Mains High Cut Recovery	200 V AC $\pm$ 5 V	Incompliance	Satisfy
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satisfy
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Quasi Sine Wave	Incompliance	Satisfy
7)	Output Voltage Range	180 V AC to 250 V AC	Incompliance	Satisfy
8)	Output Frequency	50.0 Hz $\pm$ 0.1 Hz	Incompliance	Satisfy
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice - versa	Personal Computer should not reboot during change over	Incompliance	Satisfy
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer + 7 Tubes + 7 Fans	Incompliance	Satisfy

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	936	DATE	28-08-07	PAGE NO.	3 OF 4
---------------------------------------	-----	------	----------	----------	--------

5. Remarks (if any):

- The report pertains only to the parameters mentioned in the test results.
- The UPS System has been tested as per Indentor's Specifications

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## TORQUE SERIES

Copyright Office Page 2 of 3

**Government Of India  
Copyright Office  
Extract from the Register of  
Copyrights**

© Dated :15/4/2013

1. Registration Number	: A-99531/2013
2. Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
3. Nature of the applicant's interest in the copyright of the work	: OWNER
4. Class and description of the work	: ARTISTIC WORK
5. Title of the work	: HEAT SINK CHANNEL
6. Language of the work	: AIL
7. Name, address and nationality of the author and if the author is deceased, date of his decease	: SAKHDEV KUMAR SAINI, 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
8. Whether the work is published or unpublished	: UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	: N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	: N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright	: N.A.
13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of the work. In the case of an architectural work, the year of completion of the work should also be stated.	: SU-KAM POWER SYSTEMS LTD., 306, KRITI DEEP BUILDING, NANGAL KAYA, NEW DELHI-110046 INDIA
14. Remarks, if any	: A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 11550/2011-CO/A  
Date of Application : 27/09/2011  
Date of Receipt : 27/09/2011

*[Signature]*  
DEPUTY REGISTRAR OF COPYRIGHTS



Certificate - A-99531

Form No. 2  
FORM O-2

**भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY**

अनुक्र. No. 821323

**व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999**

**व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

व्यापार चिन्ह संख्या/Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 अनुक्र. JIM/4601

यह प्रमाणपत्र सिद्ध करेगा कि निम्न उल्लेखित चिन्ह को सफलतापूर्वक चिन्ह रजिस्ट्री में, यहाँ दर्ज किया गया है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as : SU-KAM POWER SYSTEMS LTD., 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate).

In Class 9 Under No. 1634251 As of the Date 26 December 2007 in respect of Good Description Continued

अनुक्र. संख्या  
As Annexed



दिनांक परमाणु 31st मास March 2009

Sealed at my direction, this 31st day of March 2009

*[Signature]*  
Delhi अनुक्र. रजिस्ट्रार  
Registrar of Trade Marks

Trade Marks Registry.

शुद्धीकरण प्रमाणपत्र को जारी करने के लिए यह आवश्यक है कि आवेदनकर्ता को अपने आवेदन में उल्लेखित चिन्ह को सफलतापूर्वक रजिस्ट्री में दर्ज करने के लिए आवश्यक है। यदि आवेदनकर्ता को अपने आवेदन में उल्लेखित चिन्ह को सफलतापूर्वक रजिस्ट्री में दर्ज करने के लिए आवश्यक है, तो आवेदनकर्ता को अपने आवेदन में उल्लेखित चिन्ह को सफलतापूर्वक रजिस्ट्री में दर्ज करने के लिए आवश्यक है।

Certificate

**ORIGINAL**

No. 9424

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 233462  
Date: 23/12/2011  
Reciprocity Design?   
Category:



**INTELLECTUAL  
PROPERTY INDIA**

Controller General of Patents, Designs and Trade Marks

The reciprocity date of 2011 which has been entered and the name of the country. Copyright in the design is retained for ten years from the date of registration, and has to be renewed under the terms of the Act and Rules, to be published in a subsequent issue of the Gazette. This Certificate is valid for the legal protection of the design registration abroad.

DR. I. BANERJEE,  
S. A. BAYAL & CO., PATENT & TRADE MARK  
ATTORNEYS AT GURHA, WARDHAR BUTTA  
GARDEN LANE, KOLKATA-700009.

File of Class 10/4/2011 1024531

Patent - 233462

**ORIGINAL**

No. 5270

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 220866  
Date: 22/12/2011  
Reciprocity Date:   
Category:



**INTELLECTUAL  
PROPERTY INDIA**

Controller General of Patents, Designs and Trade Marks

The reciprocity date of 2011 which has been entered and the name of the country. Copyright in the design is retained for ten years from the date of registration, and has to be renewed under the terms of the Act and Rules, to be published in a subsequent issue of the Gazette. This Certificate is valid for the legal protection of the design registration abroad.

DR. I. BANERJEE,  
S. A. BAYAL & CO., PATENT & TRADE MARK  
ATTORNEYS AT GURHA, WARDHAR BUTTA  
GARDEN LANE, KOLKATA-700009.

File of Class 10/4/2011 1024531

Patent - 220866

# Digital Home UPS

## TORQUE SERIES



### Smart Graphics Alerts



**TORQUE SERIES - 2500VA/24V**

Product Code : HUP-SH-QW-024AA-02500

A Home UPS that packs a powerful punch! Traditionally, you've used a UPS to run your computer, printer, modem, router and other IT equipments, and a separate inverter for your lights, fans and other home appliances.

Now, you only need one mighty machine, Su-Kam's Torque Digital Home UPS systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product Features

- ▶ Longer Battery Life.
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- ▶ Intelligent thermal management.
- ▶ High-end Micro Controller based design.
- ▶ In-built battery equalizer.
- ▶ User selectable heavy duty charger option that charges the battery up to 50% faster as compared to other branded models.

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- ▶ Thermal shutdown protection in case of fault.
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### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode,
- ▶ state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

TORQUE 2500VA/24V				
Load Options	A	B	C	D
Computer 150W	-	8	-	-
Petrol Pump Dis.	-	-	-	1
TV 19-21"	-	-	2	-
Tube Light 40W	3	-	10	-
Fan 48 MM	-	-	10	-
CFL 11W	6	4	8	-
Photocopier	1	-	-	-
<b>Back-Up Time in Hrs.</b>				
LA 135 AH	2.10	2.0	2.18	-
LA 150 AH	2.40	2.18	2.36	-
LA 200 AH	3.40	3.20	3.48	-

\* Recommended battery 100AH - 200AH (For heavy load select only 165 Ah to 200 Ah).

# Digital Home UPS

## TORQUE SERIES

### Technical Specifications

<b>Model</b>	TORQUE SERIES		
<b>Capacity</b>	2500VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
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Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	290 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
SCR based charging with Soft start over full range of mains 140V to 285V ± 10V			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current		13 ± 2.0 Amp	10A ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery		13.6V + 0.2 V	
Battery Lower Voltage Cut each Batt.	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	395x245x355		
Weight(Kg)	25.1		

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



Panel Range : 2500VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley



- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

## DIGITAL INVERTER

**600VA - 2500VA**

Su-Kam's Digital Inverter was developed by the ingenious efforts of the Su-Kam R&D team. The development of the Su-Kam Digital Inverter was instrumental in changing the face of the power back up industry in India altogether which enabled other players to follow suit. Su-Kam's Digital Inverters are a truly futuristic concept. It ensures uninterrupted power back up to house hold appliances like TV, fans, tubelights etc. during power cuts.

The versatile Digital Inverter systems are available in a range of capacities in Digital Inverter quasi sine wave technologies. This highly advanced product from the Su-Kam stable enables the consumer to derive uninterrupted power supply even during erratic power cuts.



# DIGITAL INVERTER

## MAK SERIES



**MAK SERIES** - 650VA/12V, 850VA/12V

Su-Kam's Mak digital Inverter series ensure uninterrupted power back up to house hold appliances like TV, fans, tubelights etc. during power cuts. The inverters in this series have quick charging capabilities leading to faster charging and higher back up. The Mak series inverters can also run heavy load appliances like refrigerators, washing machines, water pump etc.

Now, you only need one mighty machine, Su-Kam's MAK Digital Inverter systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle:** Su-Kam Inverter are innovative two in one products which eliminate the need to have separate power backup system for home equipments & computers.

### Product Features

- ▶ Micro Controller Based PWM Technology Using MOSFETs.
- ▶ FUZZY Logic Control Based Battery Charger Technology.
- ▶ Reduces Frequency of Water Topping and Enhances Battery Life.
- ▶ Great Power Saving.
- ▶ Soft Start Capability for Starting Heavy Loads.
- ▶ Software Controlled Auto Reset Feature for Overload, Short Circuit.
- ▶ High and Low Input Voltage Protection for the Connected Appliances.
- ▶ User Friendly Graphical Display.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	MAK 650VA/12V			MAK 850VA/12V		
	A	B	C	A	B	C
Computer 150W	1	-	-	1	-	-
TV 19-21"	-	1	-	-	1	-
Tube Light 40W	2	2	-	1	3	-
Fan 48 MM	1	2	-	1	3	-
CFL 11W	3	5	28	5	5	37
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C, D)						
135 AH	1.35	2.0	1.4	1.3	1.18	1.36
150 AH	1.5	2.3	2.0	1.48	1.36	1.48
200 AH	2.0	3.3	2.5	2.4	2.18	2.42

\* Recommended battery 100AH-200AH



### Smart Graphics Display



Product Code : INV-MA-QW-012AA-00650

INV-MA-QW-012AA-00850

### Displays

- ▶ User-friendly graphical display/ LCD and audible alarms.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.
- ▶ Inbuilt multimeter in LCD Models for displaying Input Voltage, Frequency & Battery Voltage.

### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

# DIGITAL INVERTER

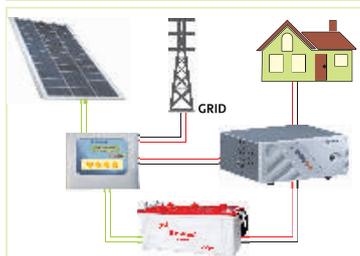
## MAK SERIES

### Technical Specifications

Model	MAK SERIES		
Capacity	650VA/12V		850VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	272x275x122		
Weight(Kg)	8.3		9.3

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 600VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# DIGITAL INVERTER

## MAK SERIES



**MAK SERIES - 1500VA/24V**

### Smart Graphics Display



Product Code : INV-MA-QW-024AA-01500

Su-Kam's Mak digital Inverter series ensure uninterrupted power back up to house hold appliances like TV, fans, tubelights etc. during power cuts. The inverters in this series have quick charging capabilities leading to faster charging and higher back up. The Mak series inverters can also run heavy load appliances like refrigerators, washing machines, water pump etc.

Now, you only need one mighty machine, Su-Kam's MAK Digital Inverter systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle:** Su-Kam Inverter are innovative two in one products which eliminate the need to have separate power backup system for home equipments & computers.

### Product Features

- ▶ Micro Controller Based PWM Technology Using MOSFETs.
- ▶ FUZZY Logic Control Based Battery Charger Technology.
- ▶ Reduces Frequency of Water Topping and Enhances Battery Life.
- ▶ Great Power Saving.
- ▶ Soft Start Capability for Starting Heavy Loads.
- ▶ Software Controlled Auto Reset Feature for Overload, Short Circuit.
- ▶ High and Low Input Voltage Protection for the Connected Appliances.
- ▶ User Friendly Graphical Display.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ User-friendly graphical display/ LCD and audible alarms.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.
- ▶ Inbuilt multimeter in LCD Models for displaying Input Voltage, Frequency & Battery Voltage.

### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

MAK 1500VA/24V			
Load Options	A	B	C
Computer 150W	1	-	-
Printer	1	-	-
TV 19-21"	-	1	-
Tube Light 40W	4	6	-
Fan 48 MM	4	6	-
CFL 11W	-	9	60
<b>Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C)</b>			
135 AH	1.36	1.10	1.48
150 AH	1.45	1.36	2.12
200 AH	2.30	2.10	3.0

\* Recommended battery 100AH - 200AH

# DIGITAL INVERTER

## MAK SERIES

### Technical Specifications

<b>Model</b>	<b>MAK SERIES</b>		
<b>Capacity</b>	<b>1500VA/24V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>	<b>(185V-265V ± 10V)</b>		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	<b>(105V-285V ± 10V)</b>		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 130V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Load dependant)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	395 x 306 x 168		
Weight(Kg)	17.2		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

# DIGITAL INVERTER

## MAK SERIES



### Smart Graphics Display



**MAK SERIES - 2500VA/48V**

Product Code : INV-MA-QW-048AA-02500

Su-Kam's Mak digital Inverter series ensure uninterrupted power back up to house hold appliances like TV, fans, tubelights etc. during power cuts. The inverters in this series have quick charging capabilities leading to faster charging and higher back up. The Mak series inverters can also run heavy load appliances like refrigerators, washing machines, water pump etc.

Now, you only need one mighty machine, Su-Kam's MAK Digital Inverter systems. Powerful and sensitive at the same time, Torque will run all your IT equipment and your electrical appliances single handedly, smoothly, without a break.

**Principle:** Su-Kam Inverter are innovative two in one products which eliminate the need to have separate power backup system for home equipments & computers.

### Product Features

- ▶ Micro Controller Based PWM Technology Using MOSFETs.
- ▶ FUZZY Logic Control Based Battery Charger Technology.
- ▶ Reduces Frequency of Water Topping and Enhances Battery Life.
- ▶ Great Power Saving.
- ▶ Soft Start Capability for Starting Heavy Loads.
- ▶ Software Controlled Auto Reset Feature for Overload, Short Circuit.
- ▶ High and Low Input Voltage Protection for the Connected Appliances.
- ▶ User Friendly Graphical Display.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

MAK 2500VA/48V			
Load Options	A	B	C
Computer 150W	-	8	-
Printer	-	1	-
TV 19-21"	-	-	2
Tube Light 40W	3	-	10
Fan 48 MM	-	-	10
CFL 11W	6	4	8
Photocopier	1	-	-
<b>Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C)</b>			
135 AH	2.10	2.0	2.18
150 AH	2.40	2.18	2.36
200 AH	3.40	3.20	3.48

\* Recommended battery 100AH - 200AH

### Displays

- ▶ User-friendly graphical display/ LCD and audible alarms.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.
- ▶ Inbuilt multimeter in LCD Models for displaying Input Voltage, Frequency & Battery Voltage.

### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

# DIGITAL INVERTER

## MAK SERIES

### Technical Specifications

<b>Model</b>	MAK SERIES		
<b>Capacity</b>	2500VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>	(185V-265V ± 10V)		
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>	(105V-285V ± 10V)		
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	290 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>SCR based charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current		13 ± 2.0 Amp	10A ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V	14.4V + 0.2 V	13.9 V + 0.2 V
Charging Float Voltage each Battery		13.6V + 0.2 V	
Battery Lower Voltage Cut each Batt.		10.5 V ± 0.2 V (Load dependant)	
Recommended Battery Capacity		100AH-200AH	
Dimension (W XDX H) in mm		395x245x355	
Weight(Kg)		25.1	

Note: Specifications are subject to change without any prior notice.

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
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#### Water Topping Kit

- ▶ Single Point multi cell water topping.
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#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.



# Approval & Certificates

## MAK SERIES

Government of India  
Copyright Office  
Database from Registrar of Copyrights

Form No. 2  
FORM O-2

1. The author(s) A-92 22007

2. Title and description of the work  
SUKAM POWER SYSTEMS LTD.  
AN INDIAN COMPANY, NEW DELHI  
INDIA

3. Name and address of the proprietor  
SUKAM POWER SYSTEMS LTD.  
PLOT NO. W2-14012  
NANGAL RAYA, NEW DELHI-110 042

4. Title of the work  
SUKAM POWER SYSTEMS LTD.

5. The nature of the work  
SOFTWARE

6. The nature of the work  
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7. Name and address of the proprietor  
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8. Whether the work is published or unpublished  
Unpublished

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37. Name and address of the proprietor  
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Certificate - A-92122/2012

Form No. 2  
FORM O-2

Duplicate Certificate

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

व्यापार चिन्ह संख्या/Trade Mark No. 1634251  
दिनांक/Date: 26/12/2007  
वर्ग संख्या/Class No. 3

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो  
के रूप में रजिस्ट्रार के पास है।  
यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो  
के रूप में रजिस्ट्रार के पास है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of  
SUKAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as : SUKAM POWER  
SYSTEMS LTD, 54 UDYOQ VIHAR PHASE-6 GURGAON HARYANA, MERCHANT,  
DISTRIBUTOR & MANUFACTURER. (Body Incorporate)

In Class 3 Under No. 1634251 as of the Date 26 December 2007 in respect of  
Good Description Continued

As Annexed

दिनांक/Date: 31st March 2009

Registered at my direction, this 31st day of March 2009

Delhi  
Registrar of Trade Marks

Certificate

ORIGINAL

No. 1167

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 220677  
Date: 11/01/2009  
Registration Date: 11/01/2009  
Country: India

Certified that the Design of which a copy is annexed, hereto has been registered  
as of the number and date given above in this..... In respect  
of the application of such design in..... In the name of  
SUKAM POWER SYSTEMS LTD., PLOT NO. W2-14012, NANGAL RAYA, NEW DELHI-110  
042, AN INDIAN COMPANY.

INTELLECTUAL  
PROPERTY INDIA

पेटेंट्स, डिजाइन्स, ट्रेडमार्क्स  
In pursuance of and subject to the provisions of the Designs Act, 2001 and the  
Design Rules, 2001.

Controller General of Patents, Designs and Trade Marks

16th AUGUST 2009

Patent - 220677

ORIGINAL

No. 5770

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 220866  
Date: 27/07/2009  
Registration Date: 27/07/2009  
Country: India

Certified that the Design of which a copy is annexed, hereto has been registered  
as of the number and date given above in this..... In respect  
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Controller General of Patents, Designs and Trade Marks

27th SEP 2009

Patent - 220866

## TECHNOLOGY ADVANTAGES

### **SMD TECHNOLOGY (SURFACE MOUNT DEVICE)**

The PCB card is based on Surface Mount Device Technology and reduces human error while manufacturing. Systems based on this SMD technology are more efficient than other conventional systems.

Surface mount device technology is used in a growing number of commercial and industrial products. Due to the small size of electronic components used in the PCB card, prototype manufacturing, rework, and repair can be difficult and are best performed using specialized techniques specific to this technology.

SMDs have improved performance over through-hole components due to their smaller size, shorter internal leads, and smaller board layouts. These factors reduce the circuit's parasitic inductance and capacitance. SMDs can also be more cost effective than traditional through-hole components due to the smaller board size, fewer board layers, and fewer holes.

SMDs can also be easier to replace than through-hole components on multilayer boards. This is because it is very difficult to heat the long hole on a multilayer board, but much easier to heat just the pad and component terminal of an SMD on the surface of a board. SMD components can be worked with in many different ways (just as through-hole components).

The PCB card assembled through the SMD technology results in increasing the reliability of the product as its electronic entities/motherboard have been assembled with 100% efficiency.

#### **Benefits of using SMD technology:**

- Reliable-Zero chances of human error
- Improved performance – due to small size of electronic components
- More cost effective - due to the smaller size vs that of traditional through-hole components
- Easier to replace



**PICO - 100VA**



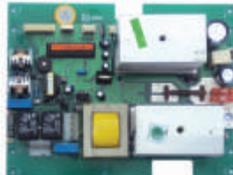
**FRENDY-i 400VA**



**MICRON 250VA**



**COSMIC 850VA**



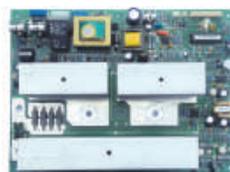
**CHIC 850VA**



**SHARK 850VA**



**SHARK 1500VA**



**SHARK 2500VA**



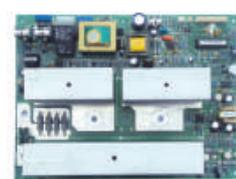
**TORQUE 850VA**



**TORQUE 1500VA**



**TORQUE 2000VA**



**TORQUE 2500VA**

## TECHNOLOGY ADVANTAGES

### TRANSFORMER TECHNOLOGY

Su-Kam's new transformer design based on S2 technology is more efficient and reliable for power back-up systems. S2 transformer technology takes minimum power from the battery and gives maximum output in load which is why the user derives maximum back-up from the HUPS. The S2 technology reduces excessive heating and also ensures quicker cooling in the transformer thereby contributing in increasing the longevity of the same.

The product range includes single phase power transformers from 100 VA to 100KVA, PCB mounted SMPS sensing / driver transformers and inductance.

Su-Kam's in house R&D team has worked towards developing the transformer design which is easy to install and eliminates all chances of error. Su-Kam's transformers are manufactured to the highest standards, for both the domestic and international markets. The best manufacturing practices and stringent quality control have succeeded in maintaining world class quality for the transformers. With a manufacturing capacity of 3 million units per annum, the Su-Kam transformer manufacturing plant has won the ISO 9001:2008 and ISO 14001 : 2004 certifications and is the largest manufacturer of transformers in the inverter industry.

Su-Kam is offering a guarantee of **7 years** on its transformers. The 7 year guarantee is being given on transformers for products like Smiley HUPS, Cosmic HUPS, Shiny HUPS, Shark HUPS, Falcon HUPS and Torque HUPS and so on. This unique guarantee is one of the first-of-its-kind offers given to customers in this industry. No other company has offered this guarantee on its products till now. The company is providing this guarantee on its products on the back of a strong in-house R&D team that has developed and tested its products for a longer life and efficiency. In addition to a strong R&D backbone, the company has employed best in class practices of Automation in manufacturing and testing of its products. Su-Kam has eliminated chances of human error by employing Automation in various processes like manufacturing and testing. Some automated processes include automatic transformer test rig, transformer manufacturing like core filling, transformer winding etc. The company has established a strong quality testing team and has enhanced its manufacturing process by employing world class technology in developing its products.

The customer derives huge benefits from the world class transformer technology employed in each of Su-Kam's products. The customer experiences increase in power back up time of its products as the transformer technology ensures that maximum output is derived from the load. In this process, there is a considerable reduction in the customer's electricity bills due to high efficiency of the transformer.



PICO 100VA



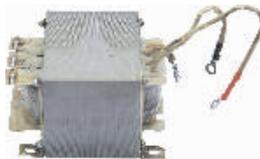
FRENDY-i 400VA



MICRON 250VA



COSMIC 850VA



CHIC 850VA



SHARK 850VA



SHARK 1500VA



SHARK 2500VA



TORQUE 850VA



TORQUE 1500VA



TORQUE 2000VA



TORQUE 3.5 kVA

## TECHNOLOGY ADVANTAGES

### **FUZZY LOGIC BASED HEAVY DUTY CHARGER TECHNOLOGY**

Su-Kam's advanced Fuzzy Logic Controlled charging technology senses the requirement of the battery and controls the charging process accordingly. The FLC technology operates using a set algorithm using a series of "IF-THEN" statements. The fuzzy control algorithm achieves the battery charging task broadly in three phases.

During the first phase, the voltage is programmed to reach maximum level (a specific value) during the initial setting up process and the current is regulated to reach maximum constant voltage level. Set point of the current is closely related with the capacity of the battery and this is taken into consideration while writing the software program.

The second phase starts when the battery voltage reaches specific value depending again on the capacity and number of cells available in the battery. During this phase, maximum charging current is reduced gradually during the charging time and the battery voltage is maintained at a certain level set (the boost voltage setting) in the program depending on the capacity of the battery.

During charging Phase I & II, a unique concept related to monitoring of rate of charge of battery voltage with respect to time (dVB/dt) has been implemented using fuzzy logic. It is a unique, highly intuitive and difficult to implement algorithm, which will protect all old / weak batteries from damage / bulging / un-serviceability. What usually and otherwise used to happen was that charging was carried on relentlessly even when charge acceptance (or consequent rise of battery voltage) was nil or insignificant or not commensurate with voltage applied and time duration thereof. The aim of dVB/dt concept is to charge the battery upto a level to which it can accept the charge safely (usually problem for old batteries) or upto an optimum level (for new batteries). Hence, condition-based solutions are obtained, which tackle the requirement of a specific battery thus charging of each battery is controlled uniquely and differently.

Overcharging is, therefore, avoided under all circumstances through this very fine tuned fuzzy regulator.

Thus, the battery life is considerably enhanced with significant power saving. All critical set points are kept completely independent of hardware, which guarantees precise control. User friendly software developed for this purpose provides an easy way to input the initial data including the charging current and the voltage. The energy saved by this method is substantial and is a very good additional reason for implementing the method in industrial environments as well.

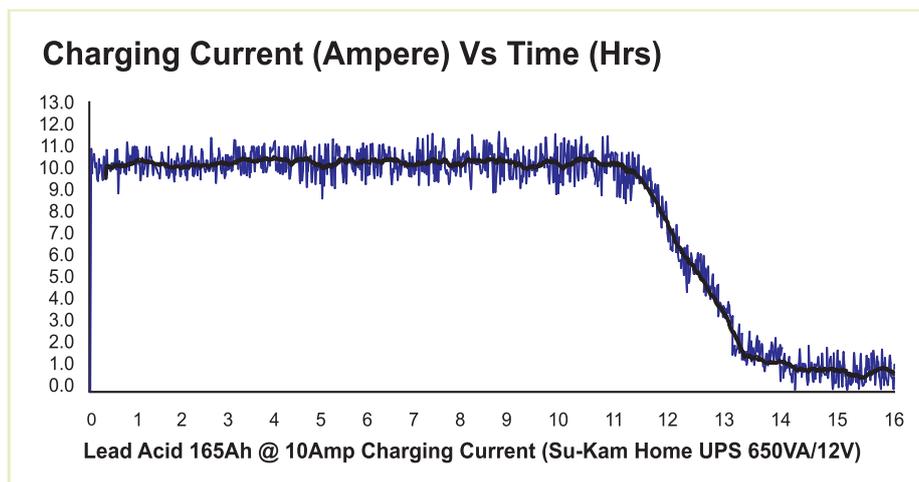
During the third phase, the voltage and current are reduced to a level (float level) that will be kept on "Trickle Charge" or "Maintenance Charge". This assures that the battery remains fully charged even while sitting or in non-usage condition.

#### **The FLC technology ensures the following:**

- **Longer Battery Life** - Su-Kam's FLC Technology senses the exact need of the battery every time. If an older battery is unable to accept the level of voltage defined earlier, it automatically sets a new level in accordance with the battery condition and charging need. This leads to enhanced battery life of approximately 30%.

During frequent power cuts, the FLC technology ensures the smooth functioning of the battery thereby preventing it from any harm. It also protects the battery from deep discharge or overcharging during frequent power cuts.

- **Reduced Water Topping** - The FLC technology ensures that the battery temperature is maintained at constant normal levels despite heavy charging during long power cuts thereby reducing the need of frequent water topping. Su-Kam's FLC Technology also controls the emission of gases while charging the battery, thus reducing the frequency of water topping significantly
- **Huge Savings on Electricity** - The FLC technology ensures timely cut off in battery charging once the system's battery requirement is fully restored. It prevents overcharging, reduced energy consumption and huge savings in the electricity bill. However, this feature is not available in traditional inverters where the charger is constantly on.



## TECHNOLOGY ADVANTAGES

### SENSING TRANSFORMER TECHNOLOGY

Su-Kam PCB comes fitted with sensing transformer technology which detects the mains voltage accurately and timely, maintaining the voltage window of 180 – 260V in UPS mode.

In traditional inverters, with variable control pot, the PCB settings may change due to temperature variation and transportation. This leads to sudden change in voltage window (upto 200 – 300V) and in charging current along with output voltage resulting in system malfunction and failure.

However, Su-Kam's sensing transformer technology acts as a perfect regulator maintaining the precise voltage window of 180-260V thereby preventing the appliances from any voltage/current surges from the grid. The customer's home appliances are thereby protected from any sudden voltage fluctuations/surges which might damage the appliances in the long run. Appliances like computers, fans, tubelights, TVs, LCDs and other sensitive equipments which are protected as a result of this technology, last longer.



### LIGHTNING PROTECTION TECHNOLOGY

For the first time in India, Su-Kam HUPS have been devised to have an inbuilt technology to protect appliances from Lightning (High-Voltage surges & spikes) by using surge protectors called MOVs-Metal Oxide Varistor. The MOVs have many advantages which make it ideal for use as a suppressor on AC or DC power line. They serve as Equipment Protection against Line Transient Damage. An MOV can be connected, collector-to-base, to dissipate the stored energy in the forward bias state without damaging the appliance. Modern electronic equipments and appliances contain solid state circuits that are susceptible to malfunction or damage caused by transient voltage spikes. When the current in inductive load is interrupted by mechanical contacts, the voltage across the contacts builds up and cause arcing which is destructive to the contacts. MOVs can be applied to prevent initiation of the arc.



An MOV is a coin-sized electronic device having two leads. It contains a ceramic mass of zinc oxide grains, in a matrix of other metal oxides (such as small amounts of bismuth, cobalt, manganese) sandwiched between two metal plates (the electrodes). The boundary between each grain and its neighbour forms a diode junction, which allows current to flow in only one direction. The mass of randomly oriented grains is electrically equivalent to a network of back-to-back diode pairs, each pair in parallel with many other pairs.

Metal Oxide Varistors can absorb part of a surge thereby protecting the HUPS. Catastrophic failure can be avoided by significantly increasing varistor energy ratings either by using a varistor of higher joules or by connecting more of these shunt mode devices in parallel.



### Compatibility with batteries

All Su-Kam inverters are equipped with the two way slider switch. The slider switch has been provisioned for both Tubular and Lead Acid batteries. It indicates which battery the customer is using: Tubular or Lead Acid. This unique innovation from Su-Kam enables the user to slide the switch towards the battery that has been configured with the system. Once the slider switch has been moved towards the correct battery type being used, it adjusts the system's configuration in alignment with the battery type installed in it. This particular innovation leads to enhancement of the battery's life as the charging technology of the system changes according to the battery's configuration as has been set by the slider switch.

## SINE WAVE HOME UPS

**250VA - 3.5 kVA**

India's first 'Sine Wave HUPS that was developed by Su-Kam's in house R&D team changed the face of the inverter industry forever. The sine wave technology eliminated the irritating humming sound and ensured power output of a higher quality.

Sine wave HUPS have special PWM switching techniques and filters which enable the reduction of third harmonic distortion to less than 3% under linear as well as non-linear load conditions. The sine wave inverter enable power output of a high quality as compared to that of the grid ensuring decrease in the rate of electricity losses thereby saving in terms of electricity bills. It also helps in increasing the life of appliances like LCDs, PCs, IT equipments, water purifiers etc.

Charger circuitry design and charging algorithm is also a major concern for power quality issues. However, charger used in the Sine Wave Home UPS utilizes SMPS (Switch Mode Power Supply) which increases the efficiency of battery charging resulting in lower transmission line losses. The Sine Wave technology also controls the losses in power due to continuous power outages.

# Sine Wave Home UPS

## SHINY SERIES



### Smart Graphics Alerts



Product Code : HUP-SH-SW-012AA-00250  
HUP-SH-SW-012AA-00450

### SHINY SERIES - 250VA/12V, 450VA/12V

Shiny Sine-Wave HUPS is based on a revolutionary new technology that will make you expect more from your power back up system. It not only offers non-stop protection for all your valuable appliances, it does it so silently, that you'll forget you have a HUPS.

Being a Sine Wave UPS, it offers non-stop protection for your appliances and more efficiency enabling reduced power consumption. And there's more. It is a silent HUPS with an automatic overload sensor and fuzzy logic that is designed to put your comfort first. The modern looks of course, is a bonus. All this and more. Just to ensure that you live life without a pause.

**Principle :** Su-Kam HUPS are highly innovative two in one products which eliminate the need to have separate power backup systems for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	SHINY 250VA/12V			SHINY 450VA/12V		
	A	B	C	A	B	C
Computer 150W	1	-	-	1	-	-
TV 19-21"	-	-	1	-	-	1
Tube Light 40W	-	1	1	-	-	2
Fan 48 MM	-	1	-	-	2	1
CFL 11W	-	2	2	2	2	2
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C)						
50 AH	2.0	1.4	1.4	-	-	-
100 AH	5.0	4.0	3.4	4.0	3.0	1.48
135 AH	-	-	-	6.0	4.24	2.4

\* Recommended battery 25AH for 150VA/ 50AH for 250VA

# Sine Wave Home UPS

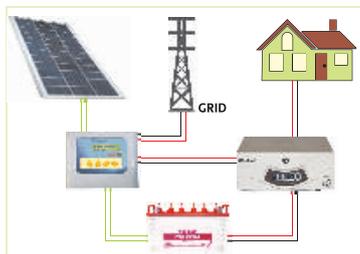
## SHINY SERIES

### Technical Specifications

Model	SHINY SERIES		
Capacity	250VA/12V		450VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-230V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
		<b>SMF</b>	<b>TUBULAR</b>
Charging Current	6 Amp (250VA)	8 Amp (450VA)	10 A ± 0.2 A
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	50AH - 100AH		100AH - 135AH
Dimension (W XDX H) in mm	245x254x123		
Weight(Kg)	5.40		6.16

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 250VA-450VA HUPS up to 160Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley



- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

13



No. / ETDC / AMB / 994  
 DL - 25-06-07

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)

G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	1 OF 4
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1. Indentor  
(Name & Address of the organization sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 1B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	3 OF 4
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4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubels+ 3 Fans	Incompliance	Satis

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	3 OF 4
---------------------------------------	-----	------	----------	----------	--------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4



# Sine Wave Home UPS

## SHINY SERIES



**SHINY SERIES - 650VA/12V, 850VA/12V**

Shiny Sine-Wave HUPS is based on a revolutionary new technology that will make you expect more from your power back up system. It not only offers non-stop protection for all your valuable appliances, it does it so silently, that you'll forget you have a HUPS.

Being a Sine Wave UPS, it offers non-stop protection for your appliances and more efficiency enabling reduced power consumption. And there's more. It is a silent HUPS with an automatic overload sensor and fuzzy logic that is designed to put your comfort first. The modern looks of course, is a bonus. All this and more. Just to ensure that you live life without a pause.

**Principle :** Su-Kam HUPS are highly innovative two in one products which eliminate the need to have separate power backup systems for home equipment & computers.

### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	SHINY 650VA/12V				SHINY 850VA/12V			
	A	B	C	D	A	B	C	D
Computer 150W	1	-	-	-	1	-	-	-
TV 19-21"	-	-	1	-	-	1	-	-
Room Cooler	-	-	-	1	-	-	-	1
Tube Light 40W	2	4	2	1	3	3	4	1
Fan 48 MM	2	3	3	-	3	3	4	1
CFL 11W	2	2	2	2	2	4	-	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)								
135 AH	1.4	1.24	1.2	2.3	1.1	1.1	1.15	2.0
150 AH	2.0	1.42	1.4	3.01	1.2	1.18	1.24	2.12
200 AH	2.54	2.3	2.2	4.0	2.0	2.05	2.12	3.1

\* Recommended battery 100AH-200AH



### Smart Graphics Alerts



Product Code : HUP-SH-SW-012AA-00650  
HUP-SH-SW-012AA-00850

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

# Sine Wave Home UPS

## SHINY SERIES

### Technical Specifications

Model	SHINY SERIES		
Capacity	650VA/12V		850/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W X D X H) in mm	280x 276 x 124		
Weight(Kg)	9.25		9.75

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.



13



No. / ETDC / AMB / 994  
 DL - 25-06-07

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	1 OF 4
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1. Indentor  
(Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 1B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

Tested by



Checked by



Issued By

Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	2 OF 4
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4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubel+ 3 Fans	Incompliance	Satis

Tested by



Checked by



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Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	25-06-07	PAGE NO.	3 OF 4
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5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

Tested by



Checked by



Issued By

Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## SHINY SERIES

**Government Of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 11/3/2013

1. Registration Number	A-98545/2013
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC WORK
5. Title of the work	850/850 VA-12V SINE WAVE HOME UPS SHINY
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SAKJEEV KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046-INDIAN
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license all rights comprising the copyright	N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-COVA  
Date of Application : 30/05/2011  
Date of Receipt : 31/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A 93545/2013

**GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY**  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

Form No. 2  
FORM 02

अनुसूची क्र. 821323

व्यापार चिन्ह संख्या / Trade Mark No. 1634251 दिनांक / Date: 26/12/2007 अक्षर / Character: JH401

यह प्रमाणित किया जाता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो कि निम्न की दिशा में है:

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOJ VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक / Date: 31st March, 2009

Sealed at my direction, this 31st day of March, 2009

DEPUTY REGISTRAR OF TRADE MARKS

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 233463

Design No. 233463  
Date 22/12/2010  
Respectively Date  
Country

Certified that the design of which a copy is annexed hereto has been registered in the name and for the use of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 502-12012, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

In conformity of and subject to the provisions of the Design Act, 1989 and the Design Rules, 2001.

INTELLECTUAL  
Controller General of Patents, Designs and Trade Marks

\*The respectivity date (if any) which has been allotted and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may extend to the term and subject to be extended for a further period of five years.

This Certificate is not for sale or for use in legal proceedings as the obtaining registration thereof.

DR. U BANERJEE,  
I. S. BAYAR & CO., PATENT & TRADE MARK ATTORNEYS, 21 KADIMA, WADHAR BUSTA GARDEN LANE KOLKATA -700016.  
Date of Issue: 18/04/2011 15:41:41

Patent - 233461

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 236650

Design No. 236650  
Date 11/05/2011  
Respectively Date  
Country

Certified that the design of which a copy is annexed hereto has been registered in the name and for the use of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 502-12012, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

In conformity of and subject to the provisions of the Design Act, 1989 and the Design Rules, 2001.

INTELLECTUAL  
Controller General of Patents, Designs and Trade Marks

\*The respectivity date (if any) which has been allotted and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may extend to the term and subject to be extended for a further period of five years.

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DR. U BANERJEE,  
I. S. BAYAR & CO., PATENT & TRADE MARK ATTORNEYS, 21 KADIMA, WADHAR BUSTA GARDEN LANE KOLKATA -700016.  
Date of Issue: 18/04/2011 15:41:41

Patent - 236650

# Sine Wave Home UPS

## SHINY SERIES



### Smart Graphics Alerts



Product Code : HUP-SH-SW-024AA-01500

### SHINY SERIES - 1500VA/24V

Shiny Sine-Wave HUPS is based on a revolutionary new technology that will make you expect more from your power back up system. It not only offers non-stop protection for all your valuable appliances, it does it so silently, that you'll forget you have a HUPS.

Being a Sine Wave UPS, it offers non-stop protection for your appliances and more efficiency enabling reduced power consumption. And there's more. It is a silent HUPS with an automatic overload sensor and fuzzy logic that is designed to put your comfort first. The modern looks of course, is a bonus. All this and more. Just to ensure that you live life without a pause.

**Principle :** Su-Kam HUPS are highly innovative two in one products which eliminate the need to have separate power backup systems for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

SHINY 1500VA/24V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	2	2	1
Room Cooler	-	-	-	1
Tube Light 40W	5	4	5	3
Fan 48 MM	6	5	5	3
CFL 11W -	5	6	-	4
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.2	1.36	1.42	2.0
150 AH	1.42	1.48	1.54	2.18
200 AH	2.3	2.42	2.48	3.18

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## SHINY SERIES

### Technical Specifications

<b>Model</b>	SHINY SERIES		
<b>Capacity</b>	1500VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp		10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery		13.7V + 0.2 V	
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x310x168		
Weight(Kg)	16.6		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

24  
 No. : ETC : AMB : 595  
 DL : 28-04-07



### TEST REPORT

ON

Off Line UPS - 1400VA

Home UPS - Smiley

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 0171-2611704, 2610496, TELEFAX : 2610416

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	995	DATE 28-04-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

1. Indentor  
(Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
186 - C, UDYOG VIHAR,  
PH - VI, SEC-07,  
GURGAON - 122001
2. Indentor's Reference : 1E0209-04  
Date: 22-06-2007
3. Description and identification of the Item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 1400 VA / 24 V DC
  - II. Model / Type no. : HOME UPS - SMILEY
  - III. Value / Tolerance : -
  - IV. Serial No. : 100407401 B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

  
 Tested By

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	995	DATE 28-04-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9.	Change Over from Mains Mode to Battery Mode and Vice - versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 7 Tubes+ 7 Fans	Incompliance	Satis

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	995	DATE 28-04-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## SHINY SERIES

**Government Of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 13/3/2013

1. Registration Number	A-98545/2013
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC WORK
5. Title of the work	850/850 VA-12V SINE WAVE HOME UPS SHINY
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SAKJEEV KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046- INDIAN
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright	N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-CO/VA  
Date of application : 30/05/2011  
Date of Receipt : 31/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A 93545/2013

**भारत सरकार  
GOVERNMENT OF INDIA**  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

Form No. 2  
FORM D-2

No. 821323

व्यापार चिन्ह/Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 निकाय/Class: 9

यह प्रमाणपत्र सिद्ध करता है कि निम्न प्रकार चिन्ह की रजिस्ट्रीकरण का प्रमाण है, जो कि निम्न है/लिखित है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of

SU-KAM POWER SYSTEMS LTD, AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER., (Body Incorporate)

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक/Date: 31st March, 2009

Deputy Registrar of Trade Marks

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 233461

Design No. 233461  
Date 22/12/2010  
Reciprocity Date\*  
Country

Certified that the design of which a copy is annexed hereto has been registered in the name and date given above in class 12-09 in respect of the application of such design on DOBBEN in the name of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. WZ-1281/2, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Design Act, 2000 and the Design Rules, 2001.

**INTELLECTUAL PROPERTY INDIA**  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may, under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. U. BANERJEE,  
I. S. BANER & CO., PATENT & TRADE MARK ATTORNEYS, 22 RADHA MADHAI DUTTA GARDEN LANE KOLKATA-700016.  
Date of Issue: 18/04/2011 15:41:41

Patent - 233461

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 203751

Design No. 203751  
Date 31 MARCH 2006  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered in the name and date given above in class 12-05 in respect of the application of such design to INVERTER TROLLEY

in the name of SU-KAM POWER SYSTEMS LTD, D-6 C, UDYOG VIHAR, PHASE VI, SECTOR-77, FACE CITY-II, GURGAON-120016, HARYANA, INDIA, AN INDIAN COMPANY,

In pursuance of and subject to the provisions of the Design Act, 2000 and the Design Rules, 2001.

**INTELLECTUAL PROPERTY INDIA**  
PATENTS, DESIGNS, TRADE MARKS  
GEOGRAPHICAL INDICATIONS  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may, under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

I. K. BANER & CO.,  
22, RADHA MADHAI DUTTA GARDEN LANE,  
KOLKATA-700016.  
Date of issue: 18<sup>th</sup> AUGUST 2006.

Patent - 203751

# Sine Wave Home UPS

## FALCON SERIES



### Smart Graphics Alerts



**FALCON SERIES - 600VA/12V, 800VA/12V**

Product Code : HUP-FL-SW-012AA-00600  
HUP-FL-SW-012AA-00800

Su-Kam's Falcon Home UPS Systems are a truly futuristic concept. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	FALCON 600VA/12V				FALCON 800VA/12V			
	A	B	C	D	A	B	C	D
Computer 150W	1	-	-	-	1	-	-	-
TV 19-21"	-	-	1	-	-	1	-	-
Room Cooler	-	-	-	1	-	-	-	1
Tube Light 40W	2	4	2	1	3	3	4	1
Fan 48 MM	2	3	3	-	3	3	4	1
CFL 11W	2	2	2	2	2	4	-	2
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C, D)								
135 AH	1.4	1.24	1.2	2.3	1.1	1.1	1.15	2.0
150 AH	2.0	1.42	1.4	3.01	1.2	1.18	1.24	2.12
200 AH	2.54	2.3	2.2	4.0	2.0	2.05	2.12	3.1

\* Recommended battery 100AH-200AH

# Sine Wave Home UPS

## FALCON SERIES

### Technical Specifications

Model	FALCON SERIES		
Capacity	600VA/12V		800VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut			185 ± 10V
Mains A.C. Low cut Recovery			190 ± 10V
Mains A.C. High cut			265 ± 10V
Mains A.C. High cut Recovery			260 ± 10V
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut			105 ± 10V
Mains A.C. Low cut Recovery			120 ± 10V
Mains A.C. High cut			285 ± 10V
Mains A.C. High cut Recovery			275 ± 10V
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency		Same as Input (45 Hz-55Hz)	
Output Frequency		50.0 Hz. ± 0.1 Hz	
Output Voltage with Full Load		200V-220V ± 25V	
Overload		Above 100%	
Short Circuit protection		>250% Load (Few msec)	
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		13.7 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	280x275x124		280 x 275 x 124
Weight(Kg)	8.7		9.9

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 600VA-800VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Approval & Certificates

## FALCON SERIES

13

No. / ETDC / AMB / 994  
DL - 25-06-07

**hartron**

### TEST REPORT

ON

Off Line UPS - BOONIA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

**CONTROLLED**

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

1. Indentor (Name & Address of the organization sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 1B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

 Tested by     
  Checked by     
  Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
---------------------------------------	-----	------------------	--------------------

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubel+ 3 Fans	Incompliance	Satis

 Tested by     
  Checked by     
  Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
---------------------------------------	-----	------------------	--------------------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

 Tested by     
  Checked by     
  Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 4



# Sine Wave Home UPS

## FALCON SERIES



**FALCON SERIES - 1400VA/24V**

### Smart Graphics Alerts



Product Code : HUP-SL-SW-024AA-01400

Su-Kam's Falcon Home UPS Systems are a truly futuristic concept. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

FALCON 1400VA/24V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	2	2	1
Room Cooler	-	-	-	1
Tube Light 40W	5	4	5	3
Fan 48 MM	6	5	5	3
CFL 11W -	5	6	-	4
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.2	1.36	1.42	2.0
150 AH	1.42	1.48	1.54	2.18
200 AH	2.3	2.42	2.48	3.18

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## FALCON SERIES

### Technical Specifications

<b>Model</b>	<b>FALCON SERIES</b>		
<b>Capacity</b>	<b>1400VA/24V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x312x168		
Weight(Kg)	16.95		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries. As you get optimum life from your batteries.

# Approval & Certificates

## FALCON SERIES

24

No. - ETDC / AMB - 945  
OL - 28-04-07



**TEST REPORT**

ON

Off Line UPS - 1400VA  
Home UPS -

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)

G. T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 0171-2611704, 2610496. TELEFAX : 2610416

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT.)	945	DATE	28-04-07	PAGE NO.	1 OF 4
---------------------------------------	-----	------	----------	----------	--------

1. Indentor  
(Name & Address  
of the organisation sending  
items for calibration)

2. Indentor's Reference

3. Description and identification of the  
Item (As Provided by the Indentor)

4. Nomenclature

5. Model / Type no.

6. Value / Tolerance

7. Serial No.

8. Manufactured By

9. Year of Manufacture

10. Trade Mark

11. Number of Samples  
Submitted

1. SU-KAM POWER SYSTEMS LTD.,  
190 - C, UDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001

1. 1B2029-04  
Dated: 22-06-2007

1. OFF-LINE UPS 1400 VA / 24 V DC

1. HOME UPS - SMILEY

1. -

1. 100407401 B

1. AS ABOVE

1. 2007

1. SU-KAM

1. ONE ONLY

Tested by

Checked by

Issued By  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT.)	945	DATE	28-04-07	PAGE NO.	2 OF 4
---------------------------------------	-----	------	----------	----------	--------

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice - versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer + 7 Tubes + 7 Fans	Incompliance	Satis

Tested by

Checked by

Issued By  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (AMCANTT.)	945	DATE	28-04-07	PAGE NO.	3 OF 4
---------------------------------------	-----	------	----------	----------	--------

5. Remarks (If any):

- The report pertains only to the parameters mentioned in the test results.
- The UPS System has been tested as per Indentor's Specifications.

Tested by

Checked by

Issued By  
Head (TP&C)

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## FALCON SERIES

**Government Of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 11/3/2013

1. Registration Number	: A-98545/2013
2. Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	: OWNER
4. Class and description of the work	: ARTISTIC WORK
5. Title of the work	: 850/850 VA-12V SINE WAVE HOME UPS SHMFI
6. Language of the work	: ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	: SANJEEV KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046-INDIAN
8. Whether the work is published or unpublished	: UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	: N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	: N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license all rights comprising the copyright	: N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	: A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-COVA  
Date of Application : 30/05/2011  
Date of Receipt : 31/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A 93545/2013

**GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY**  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

फॉर्म नं. 2  
FORM 02

अनुसूची नं. 821323

व्यापार चिन्ह संख्या / Trade Mark No. 1634251 दिनांक / Date: 26/12/2007 अक्षर / J.H.401

यह प्रमाणित किया जाता है कि निम्न प्रकार चिन्ह की रजिस्ट्रीकरण प्रमाण प्रमाण है, जो कि वर्णन में विवरण है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate).

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक / Date: 31st March 2009

Sealed at my direction, this 31st day of March, 2009

DEPUTY REGISTRAR OF TRADE MARKS

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 233461

Design No. 233461  
Date 22/12/2006  
Reciprocity Date  
Country

Certified that the design of which a copy is annexed hereto has been registered in the name and address of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 02Z-12012, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Design Act, 2000 and the Design Rules, 2001.

INTELLECTUAL PROPERTY INDIA  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may extend to the term of the Act and Rules, to extend for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

S. S. BAVARJE, I. S. BAVAR & CO., PATENT & TRADE MARK ATTORNEYS, 32 RAJMA MADHAB BUTTA GARDEN LANE, KOLKATA-700016.  
Date of issue: 18/04/2011 15:41:01

Patent - 233461

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 1219

Design No. 203751  
Date 31 MARCH 2006  
Reciprocity date  
Country

Certified that the Design of which a copy is annexed hereto has been registered in the name and date given above in Class 13-01 in respect of the apparatus of such design as "INVERTER TROLLEY" in the name of SU-KAM POWER SYSTEMS LTD, D-6 C, UDYOG VIHAR, PHASE VI, SECTOR-17, FACE CITY-II, GURGAON-120016, HARYANA, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Design Act, 2000 and the Design Rules, 2001.

INTELLECTUAL PROPERTY INDIA  
PATENTS/DESIGNS/TRADE MARKS  
GEOGRAPHICAL INDICATIONS  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may extend to the term of the Act and Rules, to extend for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

S. S. BAVAR & CO., 32, RAJMA MADHAB BUTTA GARDEN LANE, KOLKATA-700016.  
Date of issue: 18 AUGUST 2006.

Patent - 203751

# Sine Wave Home UPS

## FALCON+ SERIES



ATC- Ambient Battery Temp. Sensor

### Smart Graphics Alerts



Product Code : HUP-SM-SW-012AB-00650  
HUP-SM-SW-012AB-00850

### FALCON+ SERIES - 650/12V, 850VA/12V

Su-Kam's Falcon+ Home UPS Systems are a truly futuristic concept. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**ATC TECHNOLOGY** - The system charges the battery with three stages boost, absorption and float for optimum charging. The battery is charged with maximum available charging current in the boost mode, once the battery is charged to the maximum level, the charging state is changed to absorption in this the battery maximum charge level is maintained and the charging current is controlled, after a predefined time in this state the charging voltage level is reduced to the float level and maintained.

The system protects the overcharging of battery in high ambient temperature; this enhances the life of the connected battery significantly. Provides efficient charging for the battery with temperature compensation at higher ambient temperature

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	FALCON+ 650VA/12V				FALCON+ 850VA/12V			
	A	B	C	D	A	B	C	D
Computer 150W	1	-	-	-	1	-	-	-
TV 19-21"	-	-	1	-	-	1	-	-
Room Cooler	-	-	-	1	-	-	-	1
Tube Light 40W	2	4	2	1	3	3	4	1
Fan 48 MM	2	3	3	-	3	3	4	1
CFL 11W	2	2	2	2	2	4	-	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)								
135 AH	1.4	1.24	1.2	2.3	1.1	1.1	1.15	2.0
150 AH	2.0	1.42	1.4	3.01	1.2	1.18	1.24	2.12
200 AH	2.54	2.3	2.2	4.0	2.0	2.05	2.12	3.1

\* Recommended battery 100AH-200AH

# Sine Wave Home UPS

## FALCON+ SERIES

### Technical Specifications

Model	FALCON+ SERIES		
Capacity	650VA/12V		850VA/12V
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 25V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		13.7 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x300x168		400 x 300 x 168
Weight(Kg)	8.7		9.9

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Sine Wave Home UPS

## FALCON+ SERIES



### Smart Graphics Alerts



### FALCON+ SERIES - 1050VA/12V

Product Code : HUP-SM-SW-012AB-01050

Su-Kam's Falcon+ Home UPS Systems are a truly futuristic concept. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**ATC TECHNOLOGY** - The system charges the battery with three stages boost, absorption and float for optimum charging. The battery is charged with maximum available charging current in the boost mode, once the battery is charged to the maximum level, the charging state is changed to absorption in this the battery maximum charge level is maintained and the charging current is controlled, after a predefined time in this state the charging voltage level is reduced to the float level and maintained.

The system protects the overcharging of battery in high ambient temperature; this enhances the life of the connected battery significantly. Provides efficient charging for the battery with temperature compensation at higher ambient temperature

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

FALCON+ 1050VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	4	2
Fan 48 MM	3	3	4	2
CFL 11W -	2	4	2	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## FALCON+ SERIES

### Technical Specifications

Model	FALCON+ SERIES		
Capacity	1050/12V		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	290 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	190V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
FLC based SMPS charger with Automatic Power Factor Correction (Range of mains 100V to 290V)			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x 300 x 168		
Weight(Kg)	10.6		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Sine Wave Home UPS

## FALCON+ SERIES



ATC- Ambient Battery Temp. Sensor

### Smart Graphics Alerts



### FALCON+ SERIES - 1500VA/24V

Product Code : HUP-SM-SW-024AB-01500

Su-Kam's Falcon+ Home UPS Systems are a truly futuristic concept. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**ATC TECHNOLOGY** - The system charges the battery with three stages boost, absorption and float for optimum charging. The battery is charged with maximum available charging current in the boost mode, once the battery is charged to the maximum level, the charging state is changed to absorption in this the battery maximum charge level is maintained and the charging current is controlled, after a predefined time in this state the charging voltage level is reduced to the float level and maintained.

The system protects the overcharging of battery in high ambient temperature; this enhances the life of the connected battery significantly. Provides efficient charging for the battery with temperature compensation at higher ambient temperature

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

FALCON+ 1500VA/24V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	2	2	1
Room Cooler	-	-	-	1
Tube Light 40W	5	4	5	3
Fan 48 MM	6	5	5	3
CFL 11W -	5	6	-	4
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.2	1.36	1.42	2.0
150 AH	1.42	1.48	1.54	2.18
200 AH	2.3	2.42	2.48	3.18

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## FALCON+ SERIES

### Technical Specifications

<b>Model</b>	<b>FALCON+ SERIES</b>		
<b>Capacity</b>	<b>1500VA/24V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400x310x168		
Weight(Kg)	16.95		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries. As you get optimum life from your batteries.

13



No. / ETDC / AWB / 994  
 Dt. / 25-06-07

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER / 994	DATE / 25-06-07	PAGE NO. / 1 OF 4
ETDC (A/CANTT.)		

1. Indentor (Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD., 196 - C, LUDYOG VIHAR, PH - VI, SEC-37, GURGAON - 122001

2. Indentor's Reference : 152025-03  
Dated: 22-06-2007

3. Description and identification of the Item (As Provided by the Indentor) :

- I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
- II. Model / Type no. : HOME UPS
- III. Value / Tolerance : -
- IV. Serial No. : 170507139 B 18
- V. Manufactured By : AS ABOVE
- VI. Year of Manufacture : 2007
- VII. Trade Mark : SU-KAM
- VIII. Number of Samples Submitted : ONE ONLY.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER / 994	DATE / 25-06-07	PAGE NO. / 3 OF 4
ETDC (A/CANTT.)		

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubel+ 3 Fans	Incompliance	Satis

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER / 994	DATE / 25-06-07	PAGE NO. / 3 OF 4
ETDC (A/CANTT.)		

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## FALCON+ SERIES

**Government of India  
Copyright Office**  
Extracts from Register of Copyrights

©

Date: 11-09-2012

1. Registration No.	A-93127/2012
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD. 205, 5TH FLOOR, BANGSOD, NANGAL RAYA, NEW DELHI - 110040 INDIAN
3. Nature of applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC
5. Title of the work	FOR LAYOUT OF INVERTERHURPS(S) (FALCON+)
6. Language of the work	N/A
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SAME AS COL-2
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of the first publication and name, address and nationality of the publisher	N/A
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	N/A
11. Name, address and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SAME AS COL-2
12. Name, address and nationalities of other persons, if any, authorized to assign or license of rights comprising the copyright	N/A
13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of it, in the case of an architectural work, the year of completion of the work (should also be shown)	SAME AS COL-2
14. Remarks:	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary No. 37842010-COM  
Date of Application 01-09-2012  
Date of Receipt 01-09-2012

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A 93127/2012

FORM 02

**भारत सरकार  
GOVERNMENT OF INDIA  
यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY**

Form No. 821323

**यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999**

**यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

यापार चिन्ह संख्या / Trade Mark No. 1634251      दिनांक / Date: 26/12/2007      अंश संख्या / J.N. No. 401

यह प्रमाणपत्र सिद्ध करता है कि निम्न वर्णन किया गया यापार चिन्ह संख्या 1634251 के अंतर् में रजिस्ट्रीकरण किया गया है।

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of

**SU-KAM POWER SYSTEMS LTD, AN INDIAN COMPANY, Trading as : SU-KAM POWER SYSTEMS LTD, 54 UDYOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER. (Body Incorporate)**

in Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of

Good Description Continued

As Annexed

दिनांक / Date: 31st March, 2009

Sealed at my direction, this \_\_\_\_\_ day of \_\_\_\_\_

Delhi

REGISTRAR OF TRADE MARKS

Certificate

**ORIGINAL**

No. 253382

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 253380  
Date 23/04/2013  
Registration Date  
Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 12 in respect of the applicant's name as design IN INVERTER in the name of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 54, UDYOG, NANGAL RAYA, NEW DELHI-110040, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provision of the Design Act, 2001 and the Design Rules, 2002.

**INTELLECTUAL PROPERTY INDIA**

Controller General of Patents, Designs and Trade Marks

DE LITIGATION  
E-1, 2ND FLOOR & 7th, PATRIYA & DEBAR DEBAR  
ATTENDANCE: KAREY MATHUR OF 11A, 50/508  
LAXMI, DELHI - 110014  
Date of Issue 21-09-2013, 14:45:00

Patent - 253380

**ORIGINAL**

No. 233461

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 233461  
Date 22/02/2010  
Registration Date  
Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 12 in respect of the applicant's name as design IN INVERTER in the name of SU-KAM POWER SYSTEMS LTD. OF PLOT NO. 54, UDYOG, NANGAL RAYA, NEW DELHI-110040, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provision of the Design Act, 2001 and the Design Rules, 2002.

**INTELLECTUAL PROPERTY INDIA**

Controller General of Patents, Designs and Trade Marks

DE LITIGATION  
E-1, 2ND FLOOR & 7th, PATRIYA & DEBAR DEBAR  
ATTENDANCE: KAREY MATHUR OF 11A, 50/508  
LAXMI, DELHI - 110014  
Date of Issue 24/02/2011 15:21:41

Patent - 233461

# Sine Wave Home UPS

## SMILEY SERIES



### Smart Graphics Alerts



Product Code : HUP-SM-SW-012AA-00850

### SMILEY SERIES - 850VA/12V

Smiley Sine-Wave HUPS is based on a revolutionary new technology that will make you expect more from your power back up system. It not only offers non-stop protection for all your valuable appliances, it does it so silently, that you'll forget you have a HUPS.

Being a Sine Wave UPS, it offers non-stop protection for your appliances and more efficiency enabling reduced power consumption. And there's more. It is a super silent UPS with an automatic overload sensor and fuzzy logic that is designed to put your comfort first. The modern looks of course, is a bonus. All this and more. Just to ensure that you live life without a pause.

**Principle :** Su-Kam HUPS are highly innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bills from that incurred by a normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D Approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

SMILEY 850VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	4	2
Fan 48 MM	3	3	4	2
CFL 11W -	2	4	2	2
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

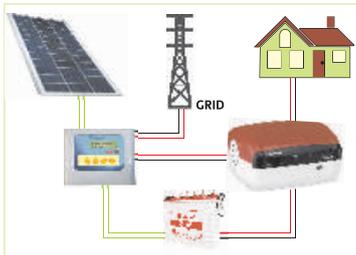
## SMILEY SERIES

### Technical Specifications

<b>Model</b>	<b>SMILEY SERIES</b>		
<b>Capacity</b>	<b>850VA/12V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 25V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	308 x 370 x 170		
Weight(Kg)	9.8		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

# Approval & Certificates

## SMILEY SERIES

13

No. / ETDC / AWB / 994  
DL - 25-06-07

**TEST REPORT**  
ON  
Off Line UPS - BOONIA  
Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

**CONTROLLED**

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

1. Indentor (Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the Item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 1B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

**Tested by**     
 **Checked by**     
 **Issued By**  
**Head (TP&C)**

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
---------------------------------------	-----	------------------	--------------------

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubel+ 3 Fans	Incompliance	Satis

**Tested by**     
 **Checked by**     
 **Issued By**  
**Head (TP&C)**

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
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5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

**Tested by**     
 **Checked by**     
 **Issued By**  
**Head (TP&C)**

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## SMILEY SERIES

Government of India  
Copyright Office  
Extracts from Register of Copyrights

Date: 09-09-2012

1. Registration No.	A-93113/2012
2. Name, address and nationality of the applicant.	SU-KAM POWER SYSTEM LTD 306, NORTH GATE BUILDING, MANGAL BAZAR, NEW DELHI - 110048
3. Nature of applicant's interest in the copyright of the work.	OWNER
4. Class and description of the work.	ARTISTIC
5. Title of the work.	LAYOUT OF INVERTER-HUPSUPS (FALCON II)
6. Language of the work.	
7. Name, address and nationality of the author and if the author is deceased, date of his decease.	SANJEEV KUMAR RABU SAME AS COL.2
8. Whether the work is published or unpublished.	UNPUBLISHED
9. Year and country of the first publication and name, address and nationality of the publisher.	NI
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers.	NI
11. Name, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any.	DAME AS COL.2
12. Name, addresses and nationalities of other persons, if any, authorized in writing or by law to exercise the copyright.	N/A
13. If the work is an artistic work, the location of the original work, including name, address and nationality of the person in possession of it. (In the case of an architectural work, the year of completion of the work should also be stated)	
14. Remarks.	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Deputy Registrar of Copyrights

Certificate - A 93113/2012

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रेशन का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

Form No. 2  
FORM 02

Form No. 821323

व्यापार चिन्ह संख्या / Trade Mark No. 1634251 तारीख / Date: 26/12/2007 न. संख्या / J.N. No. 4401

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रेशन प्रमाण प्राप्त है, जो निम्न वर्ग में दर्ज है:

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD, AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 34 UDYOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

आदेश पर जारी है।  
Based at my direction, this is issued on 31st day of March, 2009.

Deputy Registrar of Trade Marks

Certificate

ORIGINAL  
No. 12351

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 239399  
Date: 17/06/2011  
Revival Date: 01/09/12

INTELLECTUAL  
Governor General of Patents, Designs and Trade Marks

The following design is hereby registered in the name of UDYOG VIHAR PHASE-6, 34 UDYOG VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate).

REGISTRAR,  
U. S. DUYGAL, H. S. PALLAV & J. BHARATI  
ATTORNEYS AT LAW, RAJWAH ROAD, DELHI,  
INDIA-110014

Design Patent - 239399

ORIGINAL  
No. 12351

GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 239399  
Date: 17/06/2011  
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REGISTRAR,  
U. S. DUYGAL, H. S. PALLAV & J. BHARATI  
ATTORNEYS AT LAW, RAJWAH ROAD, DELHI,  
INDIA-110014

Design Patent - 239399

# Sine Wave Home UPS

## FALCON-i 2 SERIES



**FALCON i-2 SERIES - 850VA/12V**

### Graphical LCD Display



Su-Kam's Falconi2 Home UPS Systems are a truly futuristic concept. It comes with a user friendly Graphical LCD display which displays battery status, load status so that there is a good idea on how to optimize the load usage. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology, the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Silent HUPS Operation.
- ▶ Provides extra long back-up for computers as compared to ordinary HUPS.
- ▶ Pure Sine Wave output- runs all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bill from normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ Multifunction Graphical LCD display.
- ▶ Load & Battery Status show on display.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

FALCON-i 2 850VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	4	1
Fan 48 MM	3	3	4	1
CFL 11W	2	4	-	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## FALCON-i 2 SERIES

### Technical Specifications

<b>Model</b>	<b>FALCON i 2 SERIES</b>		
<b>Capacity</b>	<b>850VA/12V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 25V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	280 x 275 x 124		
Weight(Kg)	9.9		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.



# Approval & Certificates

## FALCON-i 2 SERIES

13



No. : ETDC / AMB / 994  
 Dt. : 22-06-2007

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO.	1 OF 4
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1. Indentor  
(Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 1B
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO.	3 OF 4
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4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubels+ 3 Fans	Incompliance	Satis

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO.	3 OF 4
---------------------------------------	-----	------	----------	----------	--------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4



# Sine Wave Home UPS

## SMILEY-i 2 SERIES



Graphical LCD Display



### SMILEY i-2 SERIES - 1400VA/24V

Product Code : HUP-SI-SW-024AA-01400

Su-Kam's Smiley i-2 Home UPS Systems are a truly futuristic concept with user friendly Graphical LCD display which displays shows battery status, load status so that there is a good idea on how to optimize the load usage. These two-in-one products completely eliminate the need to have separate power back-up systems for your home appliances as well as your computer. Based on a high-end microcontroller technology the Falcon Sine Wave UPS provides Pure Sine Wave output that is 100% clean, regulated, completely stable and distortion free and absolutely safe for running the most sophisticated and sensitive appliances, silently.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Silent HUPS Operation.
- ▶ Provide extra long back-up for computer as compare to ordinary HUPS.
- ▶ Pure Sine Wave output- run all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bill from normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LCD display.
- ▶ Power Switch active indication.
- ▶ Load & Battery Status show on display.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

SMILEY-i 2 1400VA/24V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	2	2	1
Room Cooler	-	-	-	1
Tube Light 40W	5	4	5	3
Fan 48 MM	6	5	5	3
CFL 11W	5	6	-	4
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.2	1.36	1.42	2.0
150 AH	1.42	1.48	1.54	2.18
200 AH	2.3	2.42	2.48	3.18

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## SMILEY-i 2 SERIES

### Technical Specifications

<b>Model</b>	SMILEY- i 2 SERIES		
<b>Capacity</b>	1400VA/24V		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 25V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V		
Charging Float Voltage each Battery	13.6V + 0.2 V		13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	400 x 312 x 168		
Weight(Kg)	16.95		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

13



No. / ETDC / AWB : 994  
 Dt. : 22-06-2007

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418  
CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO	1 OF 4
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1. Indentor  
(Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
196 - C, LUDYOG VIHAR,  
PH - VI, SEC-37,  
GURGAON - 122001
2. Indentor's Reference : 152025-03  
Dated: 22-06-2007
3. Description and identification of the item (As Provided by the Indentor) :
  - I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC
  - II. Model / Type no. : HOME UPS
  - III. Value / Tolerance : -
  - IV. Serial No. : 17050713R B 18
  - V. Manufactured By : AS ABOVE
  - VI. Year of Manufacture : 2007
  - VII. Trade Mark : SU-KAM
  - VIII. Number of Samples Submitted : ONE ONLY.

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO	3 OF 4
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4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
7)	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9)	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubes+ 3 Fans	Incompliance	Satis

  
 Tested by

  
 Checked by

  
 Issued By  
 Head (TP&C)

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

**TEST REPORT**

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE	22-06-07	PAGE NO	3 OF 4
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Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## SMILEY-i 2 SERIES

**Government of India  
Copyright Office**  
Extracts from Register of Copyrights

(C)

Date: 11-09-2012

1. Registration No.	A-9312/2012
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD. 306, 3RD FLOOR BUILDING, NANGAL RAYA, NEW DELHI - 110040 INDIA
3. Nature of applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC
5. Title of the work	FOR LAYOUT OF INVERTERHARPSLIFE (FALCON 12)
6. Language of the work	N/A
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SANJEEV KUMAR SHAM SAME AS DOLZ
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of the first publication and name, address and nationality of the publisher	N/A
10. Years and countries of subsequent publications, if any, and name, addresses and nationalities of the publishers	N/A
11. Name, address and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SAME AS DOLZ
12. Name, addresses and nationalities of other persons, if any, authorized to assign or license of rights comprising the copyright	N/A
13. If the work is an artistic work, the location of the original work, including date, address and nationality of the person in possession of it. (In the case of an architectural work, the year of completion of the work should also be shown)	N/A
14. Remarks:	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary No. 3784207-COM  
Date of Application 01-09-2012  
Date of Receipt 01-09-2012

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A 9312/2012

**GOVERNMENT OF INDIA**  
**व्यापार चिन्ह रजिस्ट्री**  
**TRADE MARKS REGISTRY**  
**व्यापार चिन्ह अधिनियम, 1999**  
**Trade Marks Act, 1999**  
**व्यापार चिन्ह के रजिस्ट्रेशन का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)**  
**Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)**

Form No. 2  
FORM D-2

No. 821323

व्यापार चिन्ह नंबर / Trade Mark No. 1634251 दिनांक / Date 26/12/2007 निकाश / JIN 401

प्रमाणित किया जाता है कि निम्न प्रकार दिखने की संरचनाएँ इसके नामों के लिए, जो कि निम्न के संदर्भ में हैं:

**SU-KAM POWER SYSTEMS LTD, AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYO VIHAR PHASE-5 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER., (Body Incorporate)**

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक / Date 31st March, 2009

DEPUTY REGISTRAR OF TRADE MARKS

Certificate

**ORIGINAL**  
No. 11429

**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 212080  
Date 27<sup>th</sup> AUG. 2008  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-99 in respect of the application of such design to "FRONT PANEL OF INVERTER"

in the name of  
**SU-KAM POWER SYSTEMS LTD., PLOT NO.WZ-140/2, NANGAL RAYA, NEW DELHI-110040, INDIA, AN INDIAN COMPANY.**

**INTELLECTUAL PROPERTY INDIA**  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAYAR & CO.  
32, RADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700010.

Date of Issue 26<sup>th</sup> MAY 2008

Patent - 212080

**ORIGINAL**  
No. 9424

**GOVERNMENT OF INDIA**  
**THE PATENT OFFICE**  
**CERTIFICATE OF REGISTRATION OF DESIGN**

Design No. 233462  
Date 22/12/2010  
Reciprocity Date\*  
Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-99 in respect of the application of such design to "FRONT PANEL OF INVERTER" of SU-KAM POWER SYSTEMS LTD., PLOT NO. WZ-140/2, NANGAL RAYA, NEW DELHI-110040, INDIA, AN INDIAN COMPANY.

in pursuance of and subject to the provisions of the Designs Act, 2001 and the Designs Rules, 2001.

**INTELLECTUAL PROPERTY INDIA**  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. I. BANERJEE,  
L. S. DAYAR & CO., PATENT & TRADE MARK ATTORNEYS 22 RADHA MADHAB DUTTA GARDEN LANE KOLKATA-700010.

Date of Issue 12/06/2011 15:25:33

Patent - 233462

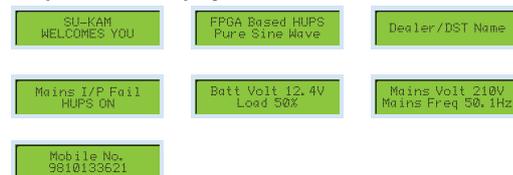
# Sine Wave Home UPS

## TORNEDO SERIES



**TORNEDO SERIES - 850VA/12V**

### Graphical LCD Display



Product Code : HUP-TN-SW-012AA-00850

Su-Kam's FPGA based Sine Wave Home UPS equipped with a revolutionary technology that make you expect more from your power back-up system. A field-programmable gate array (FPGA) is an integrated circuit designed to be configured by a customer or a designer after manufacturing—hence named "field-programmable". The FPGA configuration is generally specified using a hardware description language (HDL), similar to that used for an application-specific integrated circuit (ASIC) (circuit diagrams were previously used to specify the configuration, as they were for ASICs, but this is increasingly rare).

It is designed using field programmable gate array to add multiple provisions for user selection. There are multiple provisions in software. By using USB communication user can change all software settings as per his requirement.

**Principle :** Su-Kam HUPS are innovative two-in-one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ Designed using field programmable gate array (FPGA) technology.
- ▶ USB Communication with PC/Laptop/Hand Held Device.
- ▶ PWM controller efficient fast charging.
- ▶ Provision to change the Battery Low Cut and Battery Boost Voltage.
- ▶ Provision to change the change over time.
- ▶ Provision to change Charging Current.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ User Friendly LCD display.
- ▶ Power Switch active indication.
- ▶ Provision to feed the Dealer/Distributors Name and mobile number.

### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

TORNEDO 850VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	-	1	-
Room Cooler	-	1	-	-
Tube Light 40W	3	2	4	-
Fan 48 MM	3	3	4	-
CFL 11W	-	-	-	-
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## TORNEDO SERIES

### Technical Specifications

<b>Model</b>	TORNEDO SERIES		
<b>Capacity</b>	850VA/12V		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 25V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.2V + 0.2 V (Factory settable)		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	280x275x124		
Weight(Kg)	8.7		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 650VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

13



No. / ETDC / AWB : 994  
 DL : 25-06-07

### TEST REPORT

ON

Off Line UPS - BOONIA

Home UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)  
 PHONE : 9171-2611794, 2610486, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 1 OF 4
---------------------------------------	-----	------------------	--------------------

1. Indentor (Name & Address of the organisation sending items for calibration) : SU-KAM POWER SYSTEMS LTD.,  
 196 - C, LUDYOG VIHAR, PH - VI, SEC-37, GURGAON - 122001

2. Indentor's Reference : 152025-03  
 Dated: 22-06-2007

3. Description and identification of the Item (As Provided by the Indentor) :

I. Nomenclature : OFF-LINE UPS 800 VA / 12 V DC

II. Model / Type no. : HOME UPS

III. Value / Tolerance : -

IV. Serial No. : 17050713R B 18

V. Manufactured By : AS ABOVE

VI. Year of Manufacture : 2007

VII. Trade Mark : SU-KAM

VIII. Number of Samples Submitted : ONE ONLY.

Tested by



Checked by



Issued By  
Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
---------------------------------------	-----	------------------	--------------------

4. TEST RESULTS:

Sl. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A. MAINS MODE:</b>				
1)	Mains Low Cut Voltage	185 V AC +/- 5 V	Incompliance	Satis
2)	Mains Low Cut Recovery	190 V AC +/- 5 V	Incompliance	Satis
3)	Mains High Cut Voltage	265 V AC +/- 5 V	Incompliance	Satis
4)	Mains High Cut Recovery	260 V AC +/- 5 V	Incompliance	Satis
5)	Output Voltage and Output Frequency	Shall be same as Input Voltage & Input Frequency	Incompliance	Satis
<b>B. BATTERY MODE:</b>				
6)	Output Waveform	Sine Wave	Incompliance	Satis
	Output Voltage Range	175 V AC to 240 V AC	Incompliance	Satis
8)	Output Frequency	50.0 Hz +/- 0.1 Hz	Incompliance	Satis
<b>C. CHANGE OVER:</b>				
9.	Change Over from Mains Mode to Battery Mode and Vice-versa.	Personal Computer should not reboot during change over.	Incompliance	Satis
<b>D. LOAD CAPACITY</b>				
		Shall be able to withstand load of 1 Computer+ 3 Tubel+ 3 Fans	Incompliance	Satis

Tested by



Checked by



Issued By  
Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 G. T. ROAD, NEAR IOC DEPOT, AMBALA CANTT - 133001

TEST REPORT

TEST REPORT NUMBER ETDC (A/CANTT.)	994	DATE 25-06-07	PAGE NO. 3 OF 4
---------------------------------------	-----	------------------	--------------------

5. Remarks (if any):

1. The report pertains only to the parameters mentioned in the test results.
2. The UPS System has been tested as per Indentor's Specifications.

Tested by



Checked by



Issued By  
Head (TP&C)



Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot,  
 Ambala Cantt-133 001

Test Report Certificate - Page 4

# Approval & Certificates

## TORNEDO SERIES

**Government Of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 11/3/2013

1. Registration Number	: A-98545/2013
2. Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	: OWNER
4. Class and description of the work	: ARTISTIC WORK
5. Title of the work	: 850/850 VA-12V SINE WAVE HOME UPS SHINY
6. Language of the work	: ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	: SAUJEEN KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046-INDIAN
8. Whether the work is published or unpublished	: UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	: N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	: N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright	: N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	: SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	: A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-COVA  
Date of Application : 30/05/2011  
Date of Receipt : 31/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

**भारत सरकार  
GOVERNMENT OF INDIA**  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

फॉर्म नं. 2  
FORM 02

दस्तावेज नं. 821323

व्यापार चिन्ह संख्या / Trade Mark No. 1634251 दिनांक / Date: 26/12/2007 न. सं. / J.H. 4601

यह प्रमाणपत्र सिद्ध करता है कि निम्न प्रकार चिन्ह की रजिस्ट्रीकरण प्रमाण प्राप्त है, जो कि निम्न की दिशा में है:

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY. Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER., (Body Incorporate)

In Class 9 Under No. 1634251 As of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक / Date: 26 December 2007

दिनांक / Date: 31st March, 2009

DEPT. OF TRADE MARKS  
Registrar of Trade Marks

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 11129

Design No. 212080  
Date: 27<sup>th</sup> AUG. 2007  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-99 in respect of the application of such design to "FRONT PANEL OF INVERTER"

in the name of SU-KAM POWER SYSTEMS LTD., PLOT NO.WZ-1401/2, NANGAL RAYA, NEW DELHI-110 046, INDIA, AN INDIAN COMPANY.

INTELLECTUAL PROPERTY INDIA  
PATENTS DESIGNS TRADE MARKS  
GEOGRAPHICAL INDICATIONS

Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAVAR & CO.  
35, BADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700010.

Date of Issue: 26<sup>th</sup> MAY 2008

Patent - 212080

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 11129

Design No. 212080  
Date: 27<sup>th</sup> AUG. 2007  
Reciprocity date\*  
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Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-99 in respect of the application of such design to "FRONT PANEL OF INVERTER"

in the name of SU-KAM POWER SYSTEMS LTD., PLOT NO.WZ-1401/2, NANGAL RAYA, NEW DELHI-110 046, INDIA, AN INDIAN COMPANY.

INTELLECTUAL PROPERTY INDIA  
PATENTS DESIGNS TRADE MARKS  
GEOGRAPHICAL INDICATIONS

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L. S. DAVAR & CO.  
35, BADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700010.

Date of Issue: 26<sup>th</sup> MAY 2008

Patent-212080

# Sine Wave Home UPS

## CONNECTO SERIES



### Smart Graphics Alerts



Product Code : UPS-IU-QW-048AA-02500

### CONNECTO SERIES - 2.5 kVA/48V

Su-Kam's Connecto 2.5 kVA is a technological breakthrough, bringing you the only inverter of this capacity with internal batteries. This gives you the incomparable advantage of connecting it to your diesel genset. When the mains fail, the inverter takes on the entire load, unit and the genset is switched on. Result?

Smooth switchovers, with no blackout whatsoever. You won't even notice that the power supply has failed.

For shops, offices, factories and other institutions, this means no loss in productivity, no loss in business while protecting sensitive equipments.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Designed using field programmable gate array (FPGA) technology.
- ▶ USB Communication with PC/Laptop/Hand Held Device.
- ▶ PWM controller efficient fast charging.
- ▶ Provision to change the Battery Low Cut and Battery Boost Voltage.
- ▶ Provision to change the change over time.
- ▶ Provision to change Charging Current.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ User Friendly LCD display.
- ▶ Power Switch active indication.
- ▶ Provision to feed the Dealer/Distributors Name and mobile number.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

CONNECTO 2.5 kVA/48V			
Load Options	A	B	C
Computer 150W	-	8	-
Printer	-	1	-
TV 19-21"	-	-	2
Tube Light 40W	3	-	10
Fan 48 MM	-	-	10
CFL 11W	6	4	8
Photocopier	1	-	-
Back-Up Time in Hrs.(below back-up time is calculated on above load options A, B, C, D)			
135 AH	2.1	2.0	2.18
150 AH	2.4	2.18	2.36
200 AH	3.4	3.2	3.48

\* Recommended battery 100AH - 200AH

# Sine Wave Home UPS

## CONNECTO SERIES

### Technical Specifications

<b>Model</b>	<b>CONNECTO SERIES</b>		
<b>Capacity</b>	<b>2.5 kVA/48V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-220V ± 10V		
Overload	Above 100%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Autom</b>	<b>c Power Factor Correction</b>		
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp	13 ± 2.0 Amp	10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V		13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on load)		
Recommended Battery Capacity	100AH-150AH		
Dimension (W XDX H) in mm	245 x 545 x 225		
Weight(Kg)	52 Kg 100Ah battery 53 Kg with 120 Ah battery	57 Kg with 135 Ah battery 66 Kg with 150 Ah battery	

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES

#### Matching Trolley



- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.



# Approval & Certificates

## CONNECTO SERIES

28

No. : ETDC - AMB : 483  
Dt : 21-5-2008

**TEST REPORT**  
ON  
2.5KVA (1680W) 48 VDC UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
A Hartron Project (State Govt. Undertaking)  
G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT. - 133 001 HARYANA (INDIA)  
PHONE : 0171-2011704, 2010498, TELEFAX : 2010418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER: 483 DATE: 21-5-08 PAGE NO: 1 OF 6  
ETDC(A/CANTT.)

1. Indentor (Name & Address of the organisation sending items for calibration) : Su-Kam Power Systems Ltd, 54, Udyog Vihar, Phase-VI, Sector-37, GURGAON (HARYANA)

2. Indentor's Reference : 152303-03 Dated: 16.05.2008

3. Description and identification of the item : (As Provided by the Indentor)

I. Nomenclature : 2.5 KVA (1600 W), 48 VDC UPS  
II. Model/Type no. : CUPS  
III. Value/Tolerance : -  
IV. Serial No. : 090508001  
V. Manufactured By : AS ABOVE  
VI. Year of Manufacture : 2008  
VII. Trade Mark : SU-KAM  
VIII. Number of Samples Submitted : One only

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt. - 133001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER: 483 DATE: 21-5-08 PAGE NO: 2 OF 6  
ETDC(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A) UPS MODE</b>				
1)	Mains AC Input Range	180V-260V	Incompliance	Satis.
2)	Mains AC Low Cut	180V±5V	179.2 V	Satis
3)	Mains AC Low cut recovery	190V±5V	191.4 V	Satis.
4)	Mains AC High cut	260V±5V	260.7 V	Satis.
5)	Mains AC High cut recovery	250V±5V	247.3 V	Satis.
6)	Mains to battery Mode Change Over Time (During Mains Fail)	8-15mSec	10 msec.	Satis.
7)	Mains To Battery Mode Change Over Time (During Mains low / high cut)	< 1msec.	<1 msec	Satis.
8)	Battery Mode To Mains Change Over Time	< 1 msec.	<1 msec.	Satis.
<b>B) W- UPS MODE</b>				
9)	Mains AC Input range	140V- 270V	Incompliance	Satis.
10)	Mains AC Low Cut	140V±5V	140.6 V	Satis.
11)	Mains AC Low Cut recovery	150V±5V	150.8 V	Satis.

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt.-133001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER: 483 DATE: 21/5/08 PAGE NO: 5 OF 6  
ETDC(A/CANTT.)

5. Remarks (if any) :

- The report pertains only to the parameters mentioned in the test results.
- The UPS has been tested as per Indentor's Specifications

Tested by: [Signature] Checked by: [Signature] Issued By: [Signature]

Electronics Test & Development Centre  
G.T. Road, Near IOC Depot,  
Ambala Cantt.-133001

Test Report Certificate - Page 4

# Approval & Certificates

## CONNECTO SERIES

**Government Of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 11/3/2013

1. Registration Number	A-98545/2013
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC WORK
5. Title of the work	850/850 VA-12V SINE WAVE HOME UPS SHINY
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SAKJEEV KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046-INDIAN
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorized to assign or license rights comprising the copyright	N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-COVA  
Date of Application : 30/05/2011  
Date of Receipt : 21/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

**GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY**  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रीकरण का प्रमाणपत्र, धारा 23 (2) नियम 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

Form No. 2  
FORM 02

व्यापार चिन्ह नं. 821323

व्यापार चिन्ह नं./Trade Mark No. 1634251 दिनांक/Date: 26/12/2007 नं.सं./J.No. 401

प्रमाणित किया जाता है कि निम्न व्यापार चिन्ह की रजिस्ट्रीकरण प्रमाण पत्र प्राप्त है, जो कि निम्न की दिशा में है:

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक/Date: 31st March, 2009

Sealed at my direction, this 31st day of March, 2009

DEPUTY REGISTRAR OF TRADE MARKS

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 11429

Design No.	212080
Date	27 <sup>th</sup> AUG. 2007
Reciprocity date*	
Country	

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-99 in respect of the application of such design to "FRONT PANEL OF INVERTER"

in the name of SU-KAM POWER SYSTEMS LTD., PLOT NO.WZ-14012, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

INTELLECTUAL PROPERTY INDIA  
PATENT SIDESIGNS TRADE MARKS  
GEOGRAPHICAL INDICATIONS

Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAVAR & CO.  
32, RADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700010.

Date of Issue: 26<sup>th</sup> MAY 2008

Patent - 212080

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 233461

Design No.	233461
Date	22/12/2010
Reciprocity Date*	
Country	

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 11-09 in respect of the application of such design to: BORBEN in the name of SU-KAM POWER SYSTEMS LTD., OF PLOT NO. WZ-1202, NANGAL RAYA, NEW DELHI-110046, INDIA, AN INDIAN COMPANY.

In pursuance of and subject to the provisions of the Design Act, 2001 and the Design Rules, 2001.

INTELLECTUAL PROPERTY INDIA  
Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. L. BANERJEE,  
L. S. DAVAR & CO., PATENT & TRADE MARK  
ATTORNEY 32 RADHA MADHAB DUTTA  
GARDEN LANE KOLKATA -700010.

Date of Issue: 18/04/2011 15:51:01

Patent - 233461

# Sine Wave Commercial UPS

## FUSION SERIES



### Smart Graphics Alerts



Product Code : CUP-FU-SW-036AA-02200  
CUP-FU-SW-036AA-03200

### FUSION SERIES - 2.2kVA/36V, 3.2 kVA/36V

The world's most advanced commercial UPS Based on the world's most advanced DSP Sine Wave Technology; Fusion Pure Sine Wave UPS is the World's most advanced Commercial UPS. The power it supplies is actually purer than the power supplied from the mains. This is clearly evident, as appliances don't make any irritating, humming sound as they do on normal UPS available in the market.

Today, with expensive equipment like computers, water motor pumps, microwave ovens and air conditioners being used extensively, an ordinary UPS cannot supply the right kind of power to run these everyday utilities. Here the Fusion gives the consumer the additional advantage of being able to power all their electronic appliances, whenever required.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- run all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bill from normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ Multifunction Graphical LED display.
- ▶ Power Switch active indication.
- ▶ 5 LEDs show operation states- for operation, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	FUSION 2.2 kVA/36V				FUSION 3.2 kVA/36V			
	A	B	C	D	A	B	C	D
TV 29"	-	2	2	-	-	2	-	-
Fan	4	3	3	4	6	4	3	4
Tube Light	4	3	4	4	6	4	5	4
CFL 15W	10	10	5	8	10	10	8	10
AC 0.75 Ton	1	-	-	-	1	-	-	-
Computer	-	-	-	2	-	-	2	4
Air Cooler	-	-	1	1	-	1	1	-
Fridge 360 Lts.	-	-	1	-	-	1	-	1
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)								
135 AH	2.0	3.4	1.45	3.0	1.24	1.36	2.0	1.42
150 AH	2.18	4.0	2.0	3.24	1.42	1.42	2.18	2.1
200 AH	3.18	5.4	2.45	4.48	2.3	2.36	3.0	2.4

\* Recommended battery 100AH-200AH

# Sine Wave Commercial UPS

## FUSION SERIES

### Technical Specifications

Model	FUSION SERIES		
Capacity	2.2 kVA/36V	3.2 kVA/36V	
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	185 ± 10V		
Mains A.C. Low cut Recovery	190 ± 10V		
Mains A.C. High cut	265 ± 10V		
Mains A.C. High cut Recovery	260 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	180V-245V		
Overload	Above 100%		
Short Circuit protection	>300% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SMPS charger with Automatic Power Factor Correction</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	13 ± 2.0 Amp		10 ± 2.0 Amp
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.7V + 0.2 V		
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V (Depending on Load)		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	295 x 245 x 255		
Weight(Kg)	17.5		20.1

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Battery Equalizer



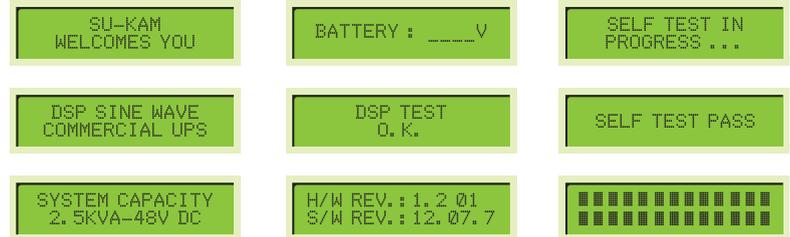
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.

# Sine Wave Commercial UPS

## FUSION SERIES



### LCD MESSAGES



Product Code : CUP-FU-SW-048AA-02500  
CUP-FU-SW-048AA-03500

### FUSION SERIES - 2.5kVA/48V, 3.5 kVA/48V

The world's most advanced commercial UPS Based on the world's most advanced DSP Sine Wave Technology; Fusion Pure Sine Wave UPS is the World's most advanced Commercial UPS. The power it supplies is actually purer than the power supplied from the mains. This is clearly evident, as appliances don't make any irritating, humming sound as they do on normal UPS available in the market.

Today, with expensive equipment like computers, water motor pumps, microwave ovens and air conditioners being used extensively, an ordinary UPS cannot supply the right kind of power to run these everyday utilities. Here the Fusion gives the consumer the additional advantage of being able to power all their electronic appliances, whenever required.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ Pure Sine Wave output- run all your appliances efficiently and noiselessly.
- ▶ Smart SMPS based fast battery charger to save 40% electricity bill from normal HUPS.
- ▶ Intelligent thermal management system.
- ▶ Solar Compatibility.
- ▶ Manual static by-pass switch.

#### Displays

- ▶ Multifunction Graphical LCD display.
- ▶ Display show operation states- for operation, state of charge, fault message.

#### Operation

- ▶ Single operation master switch.
- ▶ Automatic cooling fan operation.
- ▶ Automatic circuit breaker recovery.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Inbuilt wrong wire connection protection.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

Load Options	2.5 kVA/48V				3.5 kVA/48V			
	A	B	C	D	A	B	C	D
TV 29"	-	1	1	1	-	2	2	-
Fan	1	2	3	2	3	4	4	4
Tube Light	1	-	1	2	3	-	2	4
CFL 15W	2	4	4	8	4	10	4	4
AC 0.8 Ton	1	-	-	-	1	-	-	-
Computer	-	-	1	2	-	-	-	4
Air Cooler	-	1	-	1	-	1	-	1
Fridge 360 Lts.	-	1	1	1	-	1	2	-
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)								
135 AH	4.0	2.54	4.0	2.36	3.36	2.24	2.18	2.12
150 AH	5.24	3.12	4.48	3.0	4.0	2.42	2.42	2.36
200 AH	7.30	4.36	6.48	4.12	5.5	3.54	3.48	3.36

\* Recommended battery 100AH - 200AH

# Sine Wave Commercial UPS

## FUSION SERIES

### Technical Specifications

Model	FUSION SERIES	
Capacity	2.5 kVA/48V	3.5 kVA/48V
<b>INPUT Parameters</b>		
W-UPS (Wide UPS Mode) :		
Mains AC Lower Voltage Limit	140V±5V	
Mains AC Lower Recovery Voltage	150V±5V	
Mains AC Higher Voltage Limit	270V±5V	
Mains AC Higher Recovery Voltage	260V±5V	
<b>UPS Mode</b>		
Mains AC Lower Voltage Limit	180V±5V	
Mains AC Lower Recovery Voltage	190V±5V	
Mains AC Higher Voltage Limit	260V±5V	
Mains AC Higher Recovery Voltage	250V±5V	
<b>OUTPUT PARAMETERS ( UPS Mode )</b>		
Max. Output Voltage	220V±10V	
Output Freq.	50Hz ±0.3Hz	
Output Freq in Mains mode	Same as Input	
Change Over Time	< 10mSec.	
<b>BATTERY PARAMETERS :</b>		
DSP Controlled PWM charging with soft start over full range of mains. (140V to 270V)		
Maximum Charging current limit (Switch Selectable)	12A±1A or 16A±1A	
Max. Float Voltage Level	13.7V±0.2V/Battery	
Max. Boost Voltage Level	14.3V±0.2V/Battery	
Battery Low Voltage Limit	10.5V±0.2V/Battery	
Battery Type	12V (SMF / Flooded)	
<b>TECHNOLOGY</b>		
DSP based state of the art technology using MOSFETs.		
DSP controlled Fuzzy logic battery charger for optimum charging & enhanced battery life.		
<b>Dimensions (DxWxH)</b>	395 x 245 x 355	
<b>Weight (Kg)</b>	25.1	30.5

Note: Specifications are subject to change without any prior Notice

## POWER ACCESSORIES



### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series, thereby eradicating imbalance in the form of unequal voltages. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries, as you get optimum life from your batteries.



# Approval & Certificates

## FUSION SERIES

28

No. : ETDG - AMB : 483  
 Dt : 21-5-18

**TEST REPORT**  
 ON  
2.5KVA (16A862) 48 VDC UPS

**ELECTRONICS TEST AND DEVELOPMENT CENTRE**  
 A Hartron Project (State Govt. Undertaking)  
 G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT. - 133 001 HARYANA (INDIA)  
 PHONE : 0171-2011704, 2010498, TELEFAX : 2010418

CONTROLLED

Test Report Certificate - Page 1

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER 483 DATE 21-5-18 PAGE NO. 1 OF 6  
 ETDG(A/CANTT.)

1. Indentor (Name & Address of the organisation sending items for calibration) : Su-Kam Power Systems Ltd, 54, Udyog Vihar, Phase-VI, Sector-37, GURGAON (HARYANA)

2. Indentor's Reference : 152303-03 Dated: 16.05.2008

3. Description and identification of the item : (As Provided by the Indentor)

I. Nomenclature : 2.5 KVA (1600 W), 48 VDC UPS  
 II. Model/Type no. : CUPS  
 III. Value/Tolerance : -  
 IV. Serial No. : 090508001  
 V. Manufactured By : AS ABOVE  
 VI. Year of Manufacture : 2008  
 VII. Trade Mark : SU-KAM  
 VIII. Number of Samples Submitted : One only

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot, Ambala Cantt. - 133001

Test Report Certificate - Page 2

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER 483 DATE 21-5-18 PAGE NO. 2 OF 6  
 ETDG(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
<b>A) UPS MODE</b>				
1)	Mains AC Input Range	180V-260V	Incompliance	Satis.
2)	Mains AC Low Cut	180V±5V	179.2 V	Satis
3)	Mains AC Low cut recovery	190V±5V	191.4 V	Satis.
4)	Mains AC High cut	260V±5V	260.7 V	Satis.
5)	Mains AC High cut recovery	250V±5V	247.3 V	Satis.
6)	Mains to battery Mode Change Over Time (During Mains Fail)	8-15mSec	10 msec.	Satis.
7)	Mains To Battery Mode Change Over Time (During Mains low / high cut)	< 1msec.	<1 msec	Satis.
8)	Battery Mode To Mains Change Over Time	< 1 msec.	<1 msec.	Satis.
<b>B) W- UPS MODE</b>				
9)	Mains AC Input range	140V- 270V	Incompliance	Satis.
10)	Mains AC Low Cut	140V±5V	140.6 V	Satis.
11)	Mains AC Low Cut recovery	150V±5V	150.8 V	Satis.

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot, Ambala Cantt.-133001

Test Report Certificate - Page 3

**ELECTRONICS TEST & DEVELOPMENT CENTRE**  
 GT ROAD, NEAR IOC DEPOT., AMBALA CANTT, 133001

**Test Report**

TEST REPORT NUMBER 483 DATE 21/5/18 PAGE NO. 5 OF 6  
 ETDG(A/CANTT.)

5. Remarks (if any) :

- The report pertains only to the parameters mentioned in the test results.
- The UPS has been tested as per Indentor's Specifications

Tested by: [Signature]      Checked by: [Signature]      Issued By: [Signature]

Electronics Test & Development Centre  
 G.T. Road, Near IOC Depot, Ambala Cantt.-133001

Test Report Certificate - Page 4

# Approval & Certificates

## FUSION SERIES

**Government of India  
Copyright Office**  
Extract from the Register of Copyrights

Date: 11/3/2013

1. Registration Number	A-98545/2013
2. Name, address and nationality of the applicant	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
3. Nature of the applicant's interest in the copyright of the work	OWNER
4. Class and description of the work	ARTISTIC WORK
5. Title of the work	850/850 VA-12V SINE WAVE HOME UPS SHINY
6. Language of the work	ENGLISH
7. Name, address and nationality of the author and if the author is deceased, date of his decease	SAJEEV KUMAR SAINI, 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046-INDIAN
8. Whether the work is published or unpublished	UNPUBLISHED
9. Year and country of first publication and name, address and nationality of the publisher	N.A.
10. Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	N.A.
11. Names, addresses and nationalities of the owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licences, if any	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI -110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, subsisting in assigns or licensees of rights comprising the copyright	N.A.
13. If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work, (in the case of an architectural work, the year of completion of the work should also be shown).	SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any	A COPY OF THE WORK IS ANNEXED. WORK NOT TO BE USED IN RELATION TO ANY GOODS.

Diary Number : 6999/2011-COVA  
Date of Application : 30/05/2011  
Date of Receipt : 21/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-93545/2013

**GOVERNMENT OF INDIA  
TRADE MARKS REGISTRY**  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रेशन का प्रमाणपत्र, धारा 23 (2), Rule 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

Form No. 2  
FORM O-2

भारत सरकार  
GOVERNMENT OF INDIA  
व्यापार चिन्ह रजिस्ट्री  
TRADE MARKS REGISTRY  
व्यापार चिन्ह अधिनियम, 1999  
Trade Marks Act, 1999  
व्यापार चिन्ह के रजिस्ट्रेशन का प्रमाणपत्र, धारा 23 (2), Rule 62 (1)  
Certificate of Registration of Trade Mark, Section 23 (2), Rule 62 (1)

व्यापार चिन्ह संख्या / Trade Mark No. 1634251  
दिनांक / Date: 26/12/2007  
वर्ग संख्या / Class No. 821323

यह प्रमाणपत्र सिद्ध करता है कि निम्न व्यापार चिन्ह की रजिस्ट्रेशन प्रमाण प्रमाणपत्र है, जो कि निम्न की दिशा में है:

Certified that the Trade Mark / a representation is annexed hereto, has been registered in the name(s) of SU-KAM POWER SYSTEMS LTD. AN INDIAN COMPANY, Trading as: SU-KAM POWER SYSTEMS LTD, 54 UDYOY VIHAR PHASE-6 GURGAON HARYANA, MERCHANT, DISTRIBUTOR & MANUFACTURER, (Body Incorporate)

In Class 9 Under No. 1634251 as of the Date 26 December 2007 in respect of Good Description Continued

As Annexed

दिनांक / Date: 31st March 2009

Sealed at my direction, this 31st day of March, 2009

Registrar of Trade Marks

Certificate

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 1018

Design No. 217398  
Date: 29<sup>th</sup> JULY 2008  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 02.02 in respect of the application of such design to "HOME UPS SYSTEMS" in the name of SU-KAM POWER SYSTEMS LTD., PLOTT NO. WE-14012, NANGAL RAYA, NEW DELHI-110046 INDIA, AN INDIAN COMPANY.

**INTELLECTUAL PROPERTY INDIA**

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DR. L. BANERJEE,  
L. S. DAVAR & CO.,  
31, RADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700016.  
Date of Issue  
12 AUG 2008

Patent - 217398

**GOVERNMENT OF INDIA  
THE PATENT OFFICE  
CERTIFICATE OF REGISTRATION OF DESIGN**

ORIGINAL  
No. 9293

Design No. 217398  
Date: 29<sup>th</sup> JULY 2008  
Reciprocity date\*  
Country

Certified that the Design of which a copy is annexed hereto has been registered as of the number and date given above in class 11.01 in respect of the application of such design to "FRONT PANEL OF INVERTER" in the name of SU-KAM POWER SYSTEMS LTD., PLOTT NO. WE-14012, NANGAL RAYA, NEW DELHI-110046 INDIA, AN INDIAN COMPANY.

**INTELLECTUAL PROPERTY INDIA**

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

Controller General of Patents, Designs and Trade Marks

\*The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

L. S. DAVAR & CO.,  
31, RADHA MADHAB DUTTA GARDEN LANE,  
KOLKATA-700016.  
Date of Issue  
12<sup>th</sup> AUG 2008

Patent - 217398

## **PURE SINE WAVE HIGH FREQUENCY INVERTER**

**650VA - 3500VA**

The high frequency sine wave inverter developed by Su-Kam is a new milestone in its endeavor towards finding new and improved ways to create and add more value to its products using advanced technologies. This inverter is most suitable for running household appliances such as DVD players, tube lights, fans, T.Vs, Computers and Microwave ovens etc. Its high frequency operation results in lesser hardware and thus reduced weight (<3 kg for 800VA) which makes it easily transportable and gives it a sleek look too.

The Battery Charger comprises an SMPS based topology which gives pure DC Current to the battery and hence enhances the battery life & reliability. The battery terminals are completely isolated from the output and hence it is high on safety parameters.



# HF SINE WAVE INVERTER

## BLAZE SERIES



### Smart Graphics Display



Product Code : INV-HF-SW-012AA-00850

### BLAZE SERIES - 850VA/12V

The high frequency sine wave inverter developed by Su-Kam is a new milestone in its endeavor towards finding new and improved ways to create and add more value to its products using advanced technologies. This inverter is most suitable for running household appliances such as DVD players, tube lights, fans, T.Vs, Computers and Microwave ovens etc. Its high frequency operation results in lesser hardware and thus reduced weight (<3 kg for 800VA) which makes it easily transportable and gives it a sleek look too.

**Principle :** Su-Kam HUPS is an innovative two in one products which eliminate the need to have separate power backup system for home equipments & computers.

#### Product features

- ▶ High end Micro Controller Based Design.
- ▶ Pure DC Battery Charger extends battery life by 1.5times and has lower maintenance cost.
- ▶ Light weight and compact design resulting in reduced freight cost and space saving.
- ▶ System has high surge with handling capability (up to 300%) for starting heavy load.
- ▶ Intelligent thermal management.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge and overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ User-friendly graphical display/LED and audible alarms.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

BLAZE 850VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	4	2
Fan 48 MM	3	3	4	2
CFL 11W -	2	4	2	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C,D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# HF SINE WAVE INVERTER

## BLAZE SERIES

### Technical Specifications

<b>Model</b>	<b>BLAZE SERIES</b>		
<b>Capacity</b>	<b>850VA/12V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	115 ± 10V		
Mains A.C. Low cut Recovery	125 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	270 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	10 ± 2.0 Amp		
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V	13.6V + 0.2 V	13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	320 x 285 x 102		
Weight(Kg)	4.5		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 600VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.





# HF SINE WAVE INVERTER

## BLAZE SERIES



### Smart Graphics Display



Product Code : INV-HF-SW-024AA-01400

### BLAZE SERIES - 1400VA/24V

The high frequency sine wave inverter developed by Su-Kam is a new milestone in its endeavor towards finding new and improved ways to create and add more value to its products using advanced technologies. This inverter is most suitable for running household appliances such as DVD players, tube lights, fans, T.Vs, Computers and Microwave ovens etc. Its high frequency operation results in lesser hardware and thus reduced weight (<3 kg for 1500VA) which makes it easily transportable and gives it a sleek look too.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product features

- ▶ High end Micro Controller Based Design.
- ▶ Pure DC Battery Charger extends battery life by 1.5times and has lower maintenance cost.
- ▶ System has high surge with handling capability (up to 300%) for starting heavy load.
- ▶ Intelligent thermal management.
- ▶ Battery pole reversal protection.

#### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload and short circuit protection with 8 times auto retry.
- ▶ Reverse current flow protection.

#### Displays

- ▶ User-friendly graphical display/LED and audible alarms.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.

#### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

#### Approvals & Certifications

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

BLAZE 1400VA/24V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	2	2	1
Room Cooler	-	-	-	1
Tube Light 40W	5	4	5	3
Fan 48 MM	6	5	5	3
CFL 11W -	5	6	-	4
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C,D)				
135 AH	1.2	1.36	1.42	2.0
150 AH	1.42	1.48	1.54	2.18
200 AH	2.3	2.42	2.48	3.18

\* Recommended battery 100AH - 200AH

# HF SINE WAVE INVERTER

## BLAZE SERIES

### Technical Specifications

<b>Model</b>	<b>BLAZE SERIES</b>		
<b>Capacity</b>	<b>1400VA/24V</b>		
<b>VOLTAGE RANGE NW-UPS MODE</b>			
Mains A.C. Low cut	115 ± 10V		
Mains A.C. Low cut Recovery	125 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	270 ± 10V		
<b>VOLTAGE RANGE WW-UPS MODE</b>			
Mains A.C. Low cut	105 ± 10V		
Mains A.C. Low cut Recovery	120 ± 10V		
Mains A.C. High cut	285 ± 10V		
Mains A.C. High cut Recovery	275 ± 10V		
<b>OUTPUT PARAMETER</b>			
Mains Output Frequency	Same as Input (45 Hz-55Hz)		
Output Frequency	50.0 Hz. ± 0.1 Hz		
Output Voltage with Full Load	200V-230V ± 25V		
Overload	Above 110%		
Short Circuit protection	>250% Load (Few msec)		
<b>BATTERY CHARGING</b>			
<b>FLC based SCR charging with Soft start over full range of mains 140V to 285V ± 10V</b>			
	<b>SMF</b>	<b>TUBULAR</b>	<b>LEAD ACID</b>
Charging Current	10 ± 2.0 Amp		
Charging Boost Voltage each Battery	14.4V + 0.2 V		13.9 V + 0.2 V
Charging Float Voltage each Battery	13.6V + 0.2 V	13.6V + 0.2 V	13.6 V + 0.2 V
Battery Lower Volt. Cut each Battery	10.5 V ± 0.2 V		
Recommended Battery Capacity	100AH-200AH		
Dimension (W XDX H) in mm	320 x 285 x 102		
Weight(Kg)	4.5		

Note: Specifications are subject to change without any prior Notice

### POWER ACCESSORIES



Panel Range : 600VA-850VA HUPS up to 240Wp.

#### Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing system. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and solar power is still available to charge the battery, it automatically disconnects the mains from the inverter so that the inverter starts working in backup mode now since the power is supplied from battery and solar. This helps in optimum utilization of generated solar power.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.



# HF SINE WAVE INVERTER

## SLEEKY-Dx SERIES



**SLEEKY-DX SERIES - 2.5 kVA/48V**

### Smart LCD Display

Short Circuit  
Shut Down

Battery Charging  
[■■■■■]

Load Level 90%  
Batt. Level 60%

Self Testing in  
Progress...

Product Code : INV-HF-SW-048AA-02500

The high frequency sine wave inverter developed by Su-Kam is a new milestone in its endeavor towards finding new and improved ways to create and add more value to its products using advanced technologies. This inverter is most suitable for running household appliances such as DVD players, tube lights, fans, T.Vs, Computers and Microwave ovens etc. Its high frequency operation results in lesser hardware and thus reduced weight (<3 kg for 800VA) which makes it easily transportable and gives it a sleek look too.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

### Product features

- ▶ High end Micro Controller Based Design.
- ▶ Pure DC Battery Charger extends battery life by 1.5times and has lower maintenance cost.
- ▶ System has high surge with standing capability (up to 300%) for starting heavy load.
- ▶ Intelligent thermal management.
- ▶ Cold start capable.
- ▶ Battery pole reversal protection.
- ▶ Battery deep discharge protection.
- ▶ Solar Compatible.

### Electronic Protection updates

- ▶ Battery reversal pole protection.
- ▶ Battery deep discharge & overcharge protection.
- ▶ High surge load handling capability.
- ▶ Smart overload & short circuit Protection with 8 times auto retry.
- ▶ Reverse current flow protection.

### Displays

- ▶ User-friendly graphical display/ LCD and audible alarms.
- ▶ Power Switch active indication.
- ▶ 5 LEDs display following states - operation mode, state of charge, fault message.
- ▶ Inbuilt multimeter in LCD Models for displaying Input Voltage, Frequency & Battery Voltage.

### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

### Approvals & Certifications

- ▶ Certified by ETDC & CE Technology & Design Patent.
- ▶ Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

### LOAD CHART, APPLICATIONS & BACK-UP TIME

SLEEKY- Dx 2.5 kVA/48V				
Load Options	A	B	C	D
TV 29"	-	1	1	1
Fan	1	2	3	2
Tube Light	1	-	1	2
CFL 15W	2	4	4	8
AC 0.8 Ton	1	-	-	-
Computer	-	-	1	2
Air Cooler	-	1	-	1
Fridge 360 Lts.	-	1	1	1
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C,D)				
135 AH	4.0	2.54	4.0	2.36
150 AH	5.24	3.12	4.48	3.0
200 AH	7.30	4.36	6.48	4.12

\* Recommended battery 100AH - 200AH

# HF SINE WAVE INVERTER

## SLEEKY-DX SERIES

### Technical Specifications

<b>Model</b>	SLEEKY-DX SERIES
<b>Capacity</b>	2.5 kVA
<b>INPUT Parameters</b>	
W-UPS (Wide UPS Mode) :	
Mains AC Lower Voltage Limit	140V±5V
Mains AC Lower Recovery Voltage	150V±5V
Mains AC Higher Voltage Limit	270V±5V
Mains AC Higher Recovery Voltage	260V±5V
<b>UPS Mode</b>	
Mains AC Lower Voltage Limit	180V±5V
Mains AC Lower Recovery Voltage	190V±5V
Mains AC Higher Voltage Limit	260V±5V
Mains AC Higher Recovery Voltage	250V±5V
<b>OUTPUT PARAMETERS ( UPS Mode )</b>	
Max. Output Voltage	220V±10V
Output Freq.	50Hz ±0.3Hz
Output Freq in Mains mode	Same as Input
Change Over Time	< 10mSec.
<b>BATTERY PARAMETERS :</b>	
DSP Controlled PWM charging with soft start over full range of mains. (140V to 270V)	
Maximum Charging current limit (Switch Selectable)	12A±1A or 16A±1A
Max. Float Voltage Level	13.7V±0.2V/Battery
Max. Boost Voltage Level	14.3V±0.2V/Battery
Battery Low Voltage Limit	10.5V±0.2V/Battery
Battery Type	12V (SMF / Flooded)
<b>TECHNOLOGY</b>	
DSP based state of the art technology using MOSFETs.	
DSP controlled Fuzzy logic battery charger for optimum charging & enhanced battery life.	
<b>Dimensions (DxWxH)</b>	395 x 245 x 355
<b>Weight (Kg)</b>	17.2

Note: Specifications are subject to change without any prior notice

## POWER ACCESSORIES

### Matching Trolley



- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

### Water Topping Kit

- ▶ Single Point multi cell water topping
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extended battery life & increased performance
- ▶ No chances of acid spillage on floors
- ▶ Save Battery from under topping and over topping



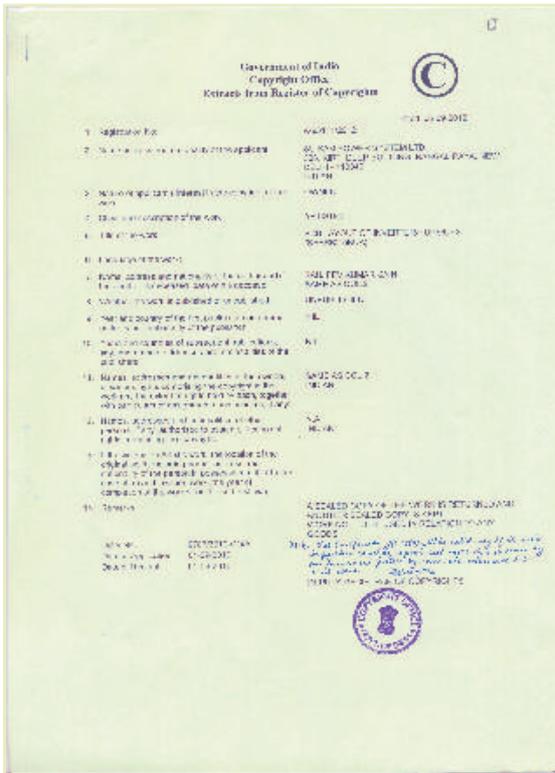
### Battery Equalizer

Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries. As you get optimum life from your batteries.



# Approval & Certificates

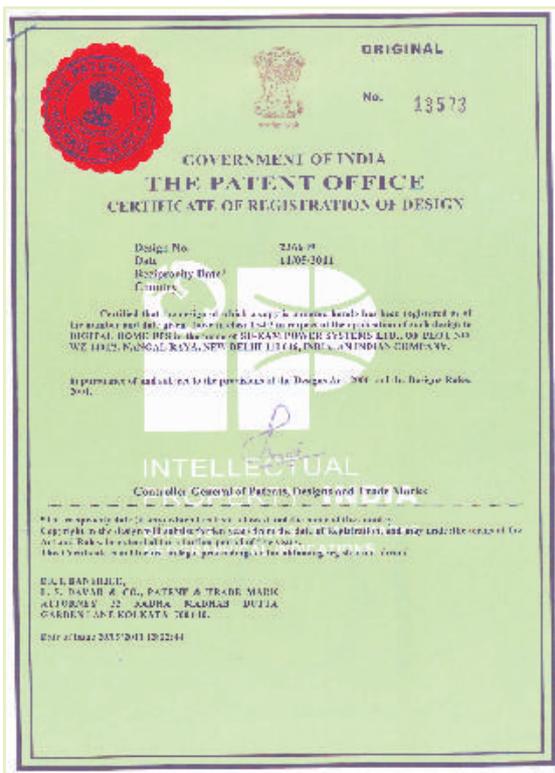
## SLEEKY-DX SERIES



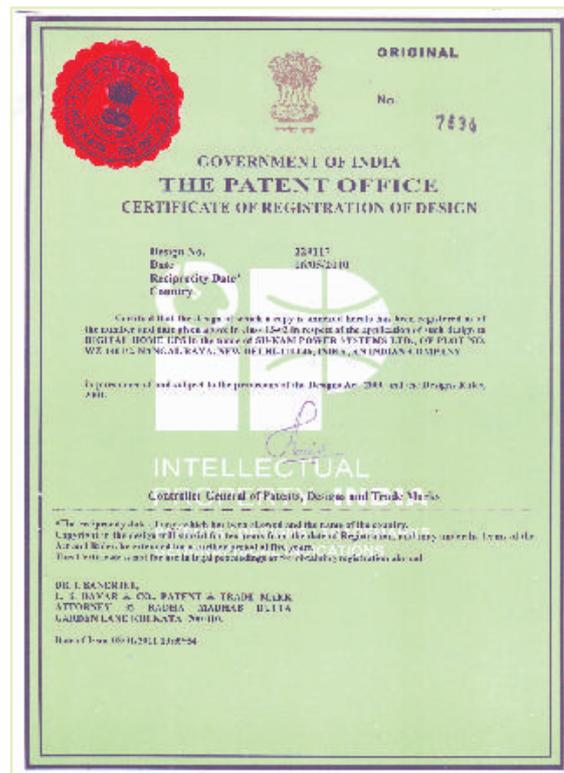
Certificate - A-93111/2012



Certificate



Patent - 236649



Patent - 229117

## TECHNOLOGY ADVANTAGES

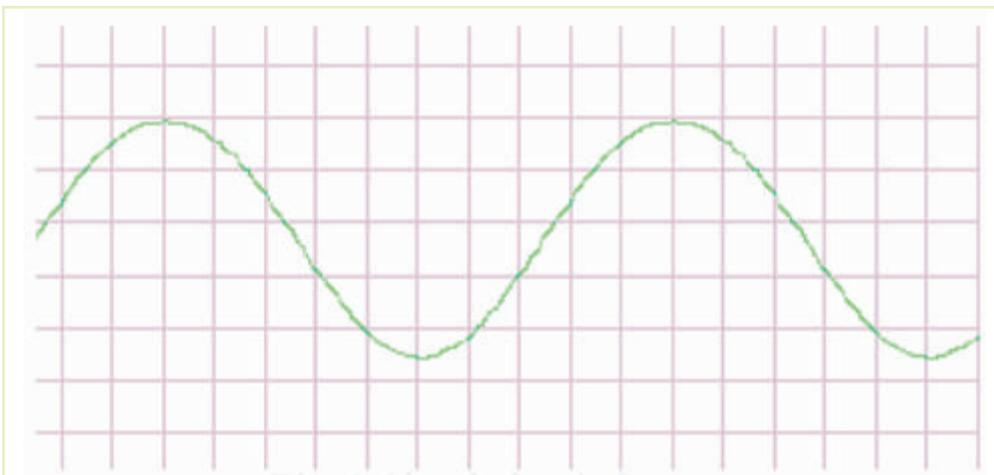
### SINE WAVE TECHNOLOGY

A need for reasonable power rating UPS is required to smoothly operate electrical and electronic appliances. Most of the commercially available UPS are actually square wave UPSs or quasi sine wave UPSs. Lights and fans can only be switched with the help of them and other electronic devices cannot be plugged into them as they damage them.

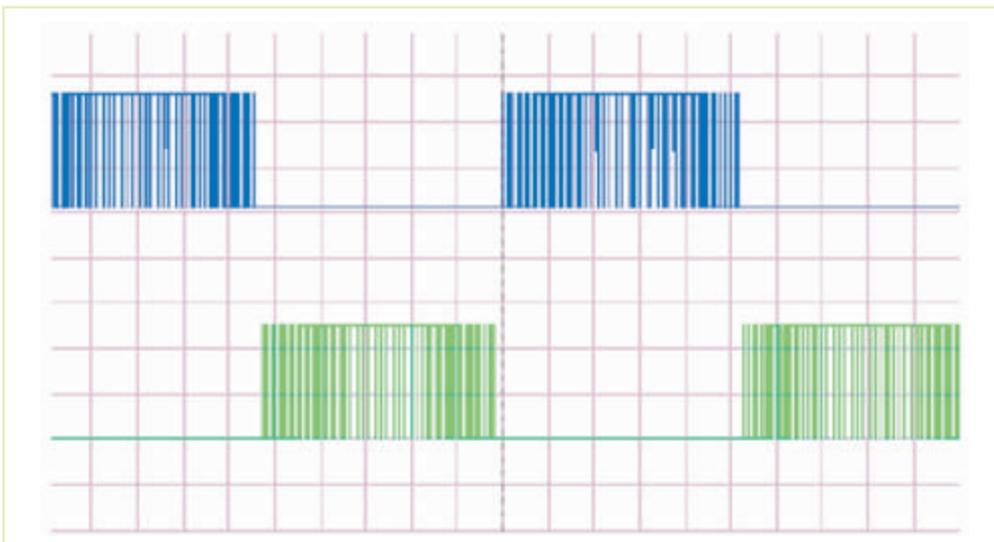
Available sine wave UPSs are very expensive and by examining the output wave, it is observed that it is not of good quality. Quality of output waveform of an UPS is determined by the harmonic contents present in it. An ideal UPS should only have a fundamental harmonic component at the designed frequency. Square wave contains odd harmonics from which fundamental harmonic component can be extracted by applying higher order filter. Higher order filters in terms of inductors and capacitors are physically unrealizable, its mathematical analysis becomes complex and gain of the system decreases drastically.

Sine wave UPS is widely used in many commercial and industrial applications including uninterruptable power supplies, induction heating, variable frequency drives, electrical vehicle drives and HVDC links. The sine wave UPS design involves rectification and inversion modes which include bridge technique, PWM technique, converter or a transformer, output filter and a feedback loop for voltage regulation. There are many methods of generating PWM. Most common of these are comparing a sinusoid with a triangular wave.

Therefore, Mathematical analysis, simulation results and practical implementation of the sine wave UPS proves that output sine wave is voltage regulated, ripple less and glitch free.



Simulation in Proteus



PWM applied on two sides of bridge

## TECHNOLOGY ADVANTAGES

### **SMD TECHNOLOGY (SURFACE MOUNT DEVICE)**

The PCB card is based on Surface Mount Device Technology and reduces human error while manufacturing. Systems based on this SMD technology are more efficient than other conventional systems.

Surface mount device technology is used in a growing number of commercial and industrial products. Due to the small size of electronic components used in the PCB card, prototype manufacturing, rework, and repair can be difficult and are best performed using specialized techniques specific to this technology.

SMDs have improved performance over through-hole components due to their smaller size, shorter internal leads, and smaller board layouts. These factors reduce the circuit's parasitic inductance and capacitance. SMDs can also be more cost effective than traditional through-hole components due to the smaller board size, fewer board layers, and fewer holes.

SMDs can also be easier to replace than through-hole components on multilayer boards. This is because it is very difficult to heat the long hole on a multilayer board, but much easier to heat just the pad and component terminal of an SMD on the surface of a board. SMD components can be worked with in many different ways (just as through-hole components).

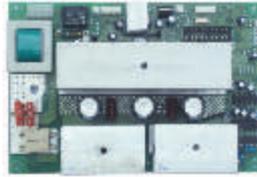
The PCB card assembled through the SMD technology results in increasing the reliability of the product as its electronic entities/motherboard have been assembled with 100% efficiency.

#### **Benefits of using SMD technology:**

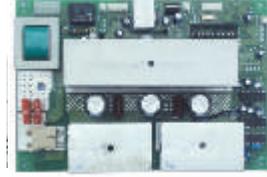
- Reliable-Zero chances of human error
- Improved performance – due to small size of electronic components
- More cost effective - due to the smaller size vs that of traditional through-hole components
- Easier to replace



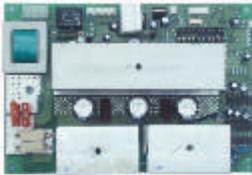
**SHINY 450VA**



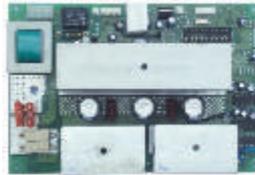
**SHINY 850VA**



**SHINY 1500VA**



**FALCON 850VA**



**FALCON 1500VA**



**TORNEDO 800VA**



**SMILEY - 850VA**



**FALCON i 2 - 850VA**



**SMILEY i 2 - 1500VA**



**FUSION 2.2 kVA**



**FUSION 2.5 kVA**



**FUSION 3.5 kVA**

## TECHNOLOGY ADVANTAGES

### TRANSFORMER TECHNOLOGY

Su-Kam's new transformer design based on S2 technology is more efficient and reliable for power back-up systems. S2 transformer technology takes minimum power from the battery and gives maximum output in load which is why the user derives maximum back-up from the HUPS. The S2 technology reduces excessive heating and also ensures quicker cooling in the transformer thereby contributing in increasing the longevity of the same.

The product range includes single phase power transformers from 100 VA to 100KVA, PCB mounted SMPS sensing / driver transformers and inductance.

Su-Kam's in house R&D team has worked towards developing the transformer design which is easy to install and eliminates all chances of error. Su-Kam's transformers are manufactured to the highest standards, for both the domestic and international markets. The best manufacturing practices and stringent quality control have succeeded in maintaining world class quality for the transformers. With a manufacturing capacity of 3 million units per annum, the Su-Kam transformer manufacturing plant has won the ISO 9001:2008 and ISO 14001 : 2004 certifications and is the largest manufacturer of transformers in the inverter industry.

Su-Kam is offering a guarantee of **7 years** on its transformers. The 7 year guarantee is being given on transformers for products like Smiley HUPS, Cosmic HUPS, Shiny HUPS, Shark HUPS, Falcon HUPS and Torque HUPS and so on. This unique guarantee is one of the first-of-its-kind offers given to customers in this industry. No other company has offered this guarantee on its products till now. The company is providing this guarantee on its products on the back of a strong in-house R&D team that has developed and tested its products for a longer life and efficiency. In addition to a strong R&D backbone, the company has employed best in class practices of Automation in manufacturing and testing of its products. Su-Kam has eliminated chances of human error by employing Automation in various processes like manufacturing and testing. Some automated processes include automatic transformer test rig, transformer manufacturing like core filling, transformer winding etc. The company has established a strong quality testing team and has enhanced its manufacturing process by employing world class technology in developing its products.

The customer derives huge benefits from the world class transformer technology employed in each of Su-Kam's products. The customer experiences increase in power back up time of its products as the transformer technology ensures that maximum output is derived from the load. In this process, there is a considerable reduction in the customer's electricity bills due to high efficiency of the transformer.



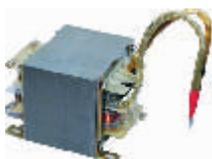
SHINY 450VA



SHINY 850VA



SHINY 1500VA



FALCON 850VA



FALCON 1500VA



TORNEDO 800VA



SMILEY - 850VA



FALCON i 2 - 850VA



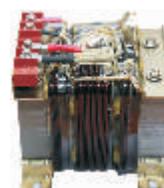
SMILEY i 2 - 1500VA



FUSION 2.2 kVA



FUSION 2.5 kVA



FUSION 3.5 kVA

## TECHNOLOGY ADVANTAGES

### FUZZY LOGIC BASED HEAVY DUTY CHARGER TECHNOLOGY

Su-Kam's advanced Fuzzy Logic Controlled charging technology senses the requirement of the battery and controls the charging process accordingly. The FLC technology operates using a set algorithm using a series of "IF-THEN" statements. The fuzzy control algorithm achieves the battery charging task broadly in three phases.

During the first phase, the voltage is programmed to reach maximum level (a specific value) during the initial setting up process and the current is regulated to reach maximum constant voltage level. Set point of the current is closely related with the capacity of the battery and this is taken into consideration while writing the software program.

The second phase starts when the battery voltage reaches specific value depending again on the capacity and number of cells available in the battery. During this phase, maximum charging current is reduced gradually during the charging time and the battery voltage is maintained at a certain level set (the boost voltage setting) in the program depending on the capacity of the battery.

During charging Phase I & II, a unique concept related to monitoring of rate of charge of battery voltage with respect to time (dVB/dt) has been implemented using fuzzy logic. It is a unique, highly intuitive and difficult to implement algorithm, which will protect all old / weak batteries from damage / bulging / un-serviceability. What usually and otherwise used to happen was that charging was carried on relentlessly even when charge acceptance (or consequent rise of battery voltage) was nil or insignificant or not commensurate with voltage applied and time duration thereof. The aim of dVB/dt concept is to charge the battery upto a level to which it can accept the charge safely (usually problem for old batteries) or upto an optimum level (for new batteries). Hence, condition-based solutions are obtained, which tackle the requirement of a specific battery thus charging of each battery is controlled uniquely and differently.

Overcharging is, therefore, avoided under all circumstances through this very fine tuned fuzzy regulator.

Thus the battery life is considerably enhanced with significant power saving. All critical set points are kept completely independent of hardware, which guarantees precise control. User friendly software developed for this purpose provides an easy way to input the initial data including the charging current and the voltage. The energy saved by this method is substantial and is a very good additional reason for implementing the method in industrial environments as well.

During the third phase, the voltage and current are reduced to a level (float level) that will be kept on "Trickle Charge" or "Maintenance Charge". This assures that the battery remains fully charged even while sitting or in non-usage condition.

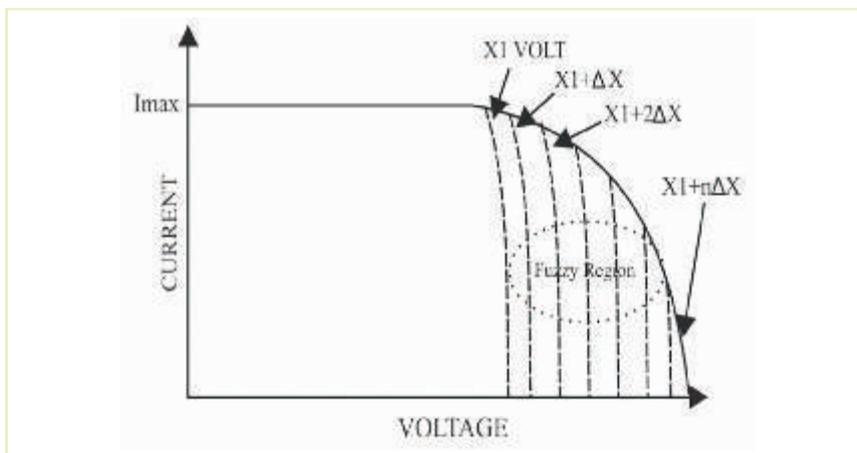
#### The FLC technology ensures the following:

- Longer Battery Life** - Su-Kam's FLC Technology senses the exact need of the battery every time. If an older battery is unable to accept the level of voltage defined earlier, it automatically sets a new level in accordance with the battery condition and charging need. This leads to enhanced battery life of approximately 30%.

During frequent power cuts, the FLC technology ensures the smooth functioning of the battery thereby preventing it from any harm. It also protects the battery from deep discharge or overcharging during frequent power cuts.

- Reduced Water Topping** - The FLC technology ensures that the battery temperature is maintained at constant normal levels despite heavy charging during long power cuts thereby reducing the need of frequent water topping. Su-Kam's FLC Technology also controls the emission of gases while charging the battery, thus reducing the frequency of water topping significantly

- Huge Savings on Electricity** - The FLC technology ensures timely cut off in battery charging once the system's battery requirement is fully restored. It prevents overcharging, reduced energy consumption and huge savings in the electricity bill. However, this feature is not available in traditional inverters where the charger is constantly on.



## TECHNOLOGY ADVANTAGES

### SENSING TRANSFORMER TECHNOLOGY

Su-Kam PCB comes fitted with sensing transformer technology which detects the mains voltage accurately and timely, maintaining the voltage window of 180 – 260V in UPS mode.

In traditional inverters, with variable control pot, the PCB settings may change due to temperature variation and transportation. This leads to sudden change in voltage window (upto 200 – 300V) and in charging current along with output voltage resulting in system malfunction and failure.

However, Su-Kam's sensing transformer technology acts as a perfect regulator maintaining the precise voltage window of 180-260V thereby preventing the appliances from any voltage/current surges from the grid. The customer's home appliances are thereby protected from any sudden voltage fluctuations/surges which might damage the appliances in the long run. Appliances like computers, fans, tubelights, TVs, LCDs and other sensitive equipments which are protected as a result of this technology, last longer.

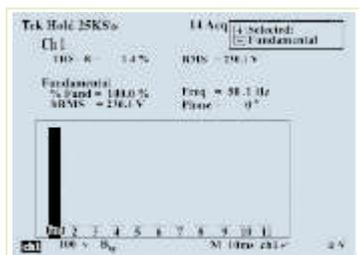
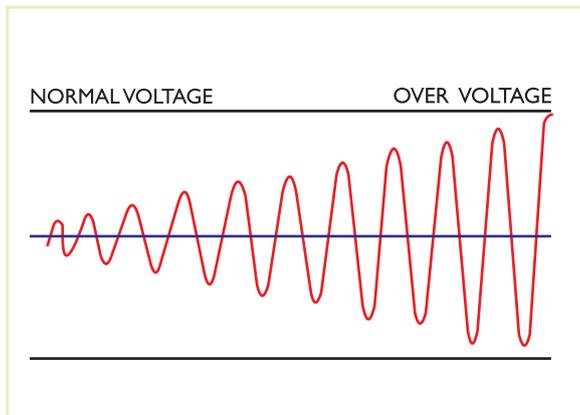


### SOFT START TECHNOLOGY

Su-Kam's unique Soft Start Technology improves inverter operation. The soft start technology does not allow high startup currents from large inductive loads to shut down the Inverter during start up. It protects the appliances by gradually ramping up the voltage during inverter startup. This function eliminates failed cold starts under load.

Output from the grid that momentarily dips in voltage and quickly recovers to allow large motorized loads to start, harms the appliances. However, the soft start technology eliminates almost all shutdowns from momentary overloads.

It also ensures noise reduction in appliances due to smooth voltage transition during startup thereby eliminating any damages to the appliance. The soft start technology protects the appliances even during frequent power cuts. It enables regulated initial current to reach the appliance to avoid any high surge voltage/current from hitting and harming the appliance



### LHD - Low Harmonic Distortion Technology

Harmonic distortion control at load bus is of vital importance to both distribution and customers. For the distribution, a power factor improvement reduces transmission system losses and increases the portion of generation capacity available for productive uses. For customers, by maintaining good power factor there is huge money saving on electricity bills.



### Compatibility with batteries

All Su-Kam inverters are equipped with the two way slider switch. The slider switch has been provisioned for both Tubular and Lead Acid batteries. It indicates which battery the customer is using: Tubular or Lead Acid. This unique innovation from Su-Kam enables the user to slide the switch towards the battery that has been configured with the system. Once the slider switch has been moved towards the correct battery type being used, it adjusts the system's configuration in alignment with the battery type installed in it. This particular innovation leads to enhancement of the battery's life as the charging technology of the system changes according to the battery's configuration as has been set by the slider switch.

## SOLAR SOLUTIONS

### 100VA - 100 kVA

India is one of the sunniest countries in world, enjoying over 300 days of sunshine every year. And energy from the sun can potentially solve India's perennial power crisis for all time to come. Because the sun's energy will never get exhausted.

At one time, generating electricity from the sun was seen to be unaffordably expensive for the average home owner. But technological advances have led to prices falling sharply and the rate of return on investment has correspondingly risen. As a result, more and more corporates, smaller enterprises and households are successfully going solar.

The government is actively encouraging the adoptions of solar energy, with new policies, subsidies, tax savings and the promotion of the private - public partnership model. Isn't it time you went solar, too?

For more information in Solar HI-Cap range, pl. refer to the Su-Kam Solar Solutions Product Catalogue.

# Solar Home UPS

## BRAINY SOLAR HOME UPS



### BRAINY SERIES - 850VA/12V

Brainy is a modern artificial intelligent machine with a contemporary look - a first in the power back-up industry which has been introduced by Su-Kam. Brainy is the world's first hybrid home UPS to harness solar energy into electricity and use its artificial intelligence to maximize utilization of solar energy to power homes. Brainy can operate on both Solar Power as well as Grid Power. It is integrated with in-built Solar Charge Controller which enables the conversion of solar power to electricity.

#### Working Principle

The UPS always gives preference to solar power while charging the battery. It senses the availability of solar power, grid power and gives charging preference to the solar power charge and only switches to the grid when the solar power is not available. It is designed to give you maximum benefit from the sun and minimize your electricity bill. In fact, the battery charging from the sun is highly efficient - more than >96%.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

#### Product Features

- ▶ Brainy Solar Hybrid UPS can operate on both Solar Power as well as Grid Power.
- ▶ Integrated with an in-built 15amp Solar Charge Controller that enables the conversion of solar power to electricity.
- ▶ Brainy Solar Hybrid UPS always gives preference to solar power while charging the battery.
- ▶ It is designed to give you maximum benefit from the sun and minimize your electricity bill.
- ▶ Brainy UPS is used with 80W panel which is expandable to 240W in 12V.
- ▶ Multi-information LCD display panel showing Rs saved from Solar, Battery voltage etc.
- ▶ Contemporary, futuristic design.
- ▶ Affordable pricing to suit any budget.
- ▶ Easy system installation

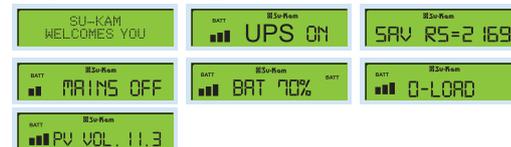
#### Displays

- ▶ User friendly display. Informative LCD displays for use and to understand the functionalities of the system.
- ▶ An easy to read LCD panel ensures display of information of every event running like battery charging, system on/off, battery charge level, output load percentage and various other system status.
- ▶ Critical visual blinking warnings like over load, low battery, main fuse blown, short circuit, high temperature etc. Saves valuable time in identifying and rectifying fault areas and increases system life.
- ▶ LCD panel shows rupees saved from Solar charging at pre determined tariff rate.

#### Approvals & Certifications

- ▶ IEC 61683, IEC 60068-2-1,2,14,30,31
- ▶ IEC 62093
- ▶ MNRE Approved
- ▶ EN - 62040 - 1, EN - 62040 - 2
- ▶ LE Certified
- ▶ R&D approved by Govt. of Science & Technology.

#### Graphical LCD Display



Product Code : UPS-BR-SW-012AA-00850

### LOAD CHART, APPLICATIONS & BACK-UP TIME

BRAINY 850VA/12V				
Load Options	A	B	C	D
Computer 150W	1	-	-	-
TV 19-21"	-	1	-	-
Room Cooler	-	-	-	1
Tube Light 40W	3	3	4	2
Fan 48 MM	3	3	4	2
CFL 11W -	2	4	2	2
Back-Up Time in Hrs. (below back-up time is calculated on above load options A, B, C, D)				
135 AH	1.1	1.1	1.15	2.0
150 AH	1.2	1.18	1.24	2.12
200 AH	2.0	2.05	2.12	3.1

\* Recommended battery 100AH - 200AH

# Solar Home UPS

## BRAINY SERIES

### TECHNICAL SPECIFICATIONS

Inverter Output power	850VA/12VDC
Wave form type	Sine wave
Output Voltage in Volts (AC)	220 V ± 10 %
Output frequency in Hz	50 ± 1% Hz
Efficiency	> 75% (80-100% Resistive Load)
Distortion (THD)	<5% on linear load
Forced ventilation	Thru Cooling Fan
Nominal Input voltage (DC)	12V
Battery Low Voltage warning	10.7V±0.2V
Battery Low Voltage cut off	10.5V±0.2V
Battery Reverse pole protection	Dc Fuse Blown
Short Circuit protection	retry for 4 times & permanent out put OFF
Over load Protection	150% for >10 Seconds
Over Load Shutdown	permanent out put OFF
Over Heating protection	>105°C
<b>Grid Mains Mode</b>	
Grid Charging Current (Tubular / SMF / LA)	14A ± 2A*
Charge End Voltage (Battery Boost & Float Charging Voltage)	14.4V (SMF, Tubular) / 14.0V (LA) +/-0.2V.(Grid charging stops when battery reaches float charging 13.6V+/-0.2V and PV power will be >5 to 8W then System transfer to backup mode as same as specified changeover time (Ups <15 msec. or W-Ups <40msec. **).
Change over time:	Mains to Inverter < 40 milliseconds
Wide Window & Narrow Window	Mains to Inverter <15 milliseconds
<b>Wide Window</b>	
Grid low cut	105VAC ±10V
Grid low cut recovery	120VAC ±10V
Grid high cut	285VAC ±10V
Grid high cut recovery	275VAC ±10V
<b>Narrow Window</b>	
Grid low cut	185VAC ±10V
Grid low cut recovery	190VAC ±10V
Grid high cut	265VAC ±10V
Grid high cut recovery	255VAC ±10V

Note: Specifications are subject to change without any prior notice

### POWER ACCESSORIES



#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.

#### Water Topping Kit

- ▶ Single Point multi cell water topping.
- ▶ Safely fill batteries without removing vent covers.
- ▶ Extends battery life & increases performance.
- ▶ No chance of acid spillage on floor.
- ▶ Saves battery from under topping and over topping



# Solar Power Conditioning Unit

## SOLAR PUC SERIES



Product Code : PCU-SP-OT-024AA-00600  
PCU-SP-OT-024AA-01000

### SOLAR PCU - 600VA/24V, 1000VA/24V

It is an integrated system consisting of a Solar Charge Controller, Inverter and a Grid charger. It has inbuilt intelligence to utilize the solar power on priority.

#### Working Principle

Solar PCU converts energy from solar panel as the first priority and incase the solar power can not support the load grid power is used to charge the battery and supply load. for home equipment & computers.

#### Product Features

- ▶ Pure sine wave output
- ▶ In-built heavy duty Solar charge Controller
- ▶ Excellent overload capabilities
- ▶ Optimal battery protection
- ▶ Best reliability
- ▶ High reliability with Minimal maintenance
- ▶ Grid charging enable/disable option
- ▶ Solar and Grid charging current sharing for maximum solar usage
- ▶ User set-able Solar Mains Battery (SMB) and Solar Battery
- ▶ Mains (SBM) operations

#### Electronic Protection updates

- ▶ Battery low protection
- ▶ Battery over voltage shutdown
- ▶ Over temperature and overload protection
- ▶ Short circuit protection
- ▶ Reverse polarity protection by internal fuse
- ▶ Acoustic alarm in various warning conditions

#### Displays

- ▶ Display showing PV & Inverter output
- ▶ LCD showing various input and output parameters such as •Output voltage •load •input voltage •battery voltage •PV voltage •current with cumulative solar energy.

#### Operation

- ▶ Short circuit, over load & over heating protection
- ▶ Automatic Charger Restart Time after High Current

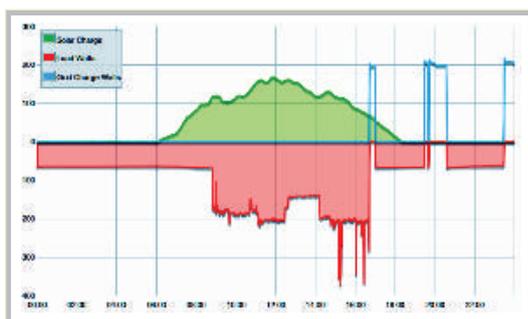
#### Remote Monitoring Software

- ▶ Remote monitoring through RS232, Ethernet, GSM, GPRS

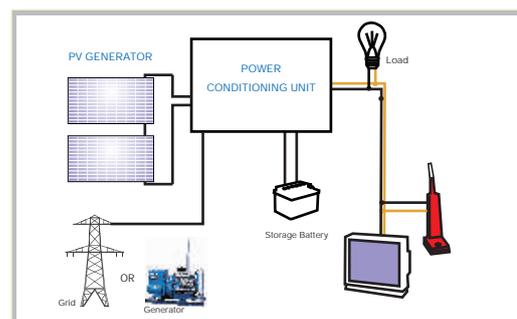
#### Certification & patents

- ▶ IEC61683, IEC60068-2-1,2,14,30,31 (N/A for 6H24);
- ▶ IEC62093 certification

GENERATION PROFILE



SOLAR PCU BASED INSTALLATION DIAGRAM



# Solar Power Conditioning Unit

## SOLAR PCU SERIES

### Technical Specifications

Model	PCU 6H24	PCU1K24
Capacity	600VA/24VDC	1000VA/24VDC
Backup Mode (Solar Power Available/Not Available)		
Wave Form Type	Sine Wave	
Output Voltage Regulation (AC)	230 V $\pm$ 5 %	
Output Frequency in Hz	50 $\pm$ 1% Hz	
Efficiency	Typical 85% on 80-100% resistive load	
Distortion (THD)	<5% on linear load	
Forced Ventilation	Thru Cooling Fan	
Nominal Input Voltage (DC)	24V	
Battery Low Voltage Warning	23.4V $\pm$ 0.4V*	
Battery Low Voltage Cut	22.8V $\pm$ 0.4V*	
Load Reconnection	25.6V $\pm$ 0.4V*	
Input Terminal Reverse Protection for Battery	DC MCB Trip / Dc Fuse Blown	
Sleep Mode (Selectable)	If the load is <5% then system power On 5sec & power Off every 50sec automatically*	
Short Circuit Protection	retry for 4 times & permanent out put OFF	
Over Load Protection	150% for 30 Seconds	
Over Load Shutdown	retry for 8 times & permanent out put OFF	
Over Heating Protection	>85°C	
GRID MAINS MODE	Grid Power connected to load when battery voltage <23.4 $\pm$ 0.4 battery charging take place by Grid power 175V-285V; 190V	
Grid I/P Range	265V $\pm$ 10V	
	5A - 13A $\pm$ 1A (Max)*	
Grid Charging Current	Grid charging stop when battery reached 28.4 $\pm$ 0.4V* and transfer to backup mode.	
Charge End Voltage	Mains to Inverter <25 milliseconds	
Change over time WW	Mains to Inverter <10 milliseconds	
Change over time NW		
	WIDE WINDOW	NARROW WINDOW
Grid low cut	175VAC $\pm$ 10V	Grid low cut 190VAC $\pm$ 10V
Grid low cut recovery	285VAC $\pm$ 10V	Grid low cut recovery 200VAC $\pm$ 10V
Grid high cut	275VAC $\pm$ 10V	Grid high cut 265VAC $\pm$ 10V
Grid high cut recovery	Same as Input	Grid high cut recovery 255VAC $\pm$ 10V
Out Put Voltage	Same as Input	Out Put Voltage Same as Input
Out Put Frequency	Same as Input	Out Put Frequency Same as Input
Out Put Waveform		Out Put Waveform Same as Input
SOLAR CHARGE CONTROLLER		
Type	Series Regulator, PWM based Common Negative	
Maximum I/P PV Voltage	50V Max. for 24V System	
Solar Array	Single Array	
Charging Current I <sub>max</sub> .	10A/20A/30A/40A/50A (Max.)*	
Bulk Voltage	28.4V $\pm$ 0.4V* (Adj./26.4V to 30V)	
Absorption Period	Hold Battery Voltage at Bulk Setting for a Cumulative Period of 1hour	
Float Voltage	27 $\pm$ 0.4*	
Protection	Over Current, Battery over Charge, PV/Battery Reverse Polarity, Reverse Current Flow, High Temperature	
Automatic Charger Restart	3.5 Minutes	
Time after High Current		
PV Voltage for night	< 4V	
PV Voltage for day	> 4V	
Solar Charge Controller to PV power connection time	< 30sec	
Display Type	LCD Display	
Dimension (W x D x H) in mm	245 x 450 x 356	
Weight (Kg)	17.67	23.60

Note : Specification subject to change without prior Notice.  
\* Factory settable as per customer requirement.

## SU-KAM'S BATTERY

**35AH - 220AH**

Can you imagine life without batteries? We need them every day, in so many places-our homes, cars, computers laptops, MP 3 players, generators, cell phones, in aircraft, in ships and many more applications. A battery is stores electric power that solves so many of our day-to-day problems.

At Su-Kam range of Batteries are :

- Lead Acid Battery
- Tubular Battery
- Automate Battery

## LEAD ACID BATTERY

### POWER BANK SERIES



Product Code : BAT-PB-LA-01224-00100  
 BAT-PB-LA-01224-00135  
 BAT-PB-LA-01224-00150  
 BAT-PB-LA-01224-00165  
 BAT-SL-LA-01224-00200

#### POWER BANK SERIES - 100AH - 200 AH

Power Bank series is an economical multi cell flat plate series. A proven Technology for years offers good electrical performance and better distribution of lead mass for current distribution and long grid life. The battery uses more plates, means more surface area giving more power.

#### Product Features

- ▶ Extra thick plates for excellent discharge performance which increases the battery life.
- ▶ Extremely pure Lead Oxide for low maintenance and higher shelf life.
- ▶ Double separation between plates to prevent them from shorting and active material shedding.
- ▶ Using advances (US) technology for Inter Cell Welding which ensues optimal performance due to low internal resistance.
- ▶ Micro porous aqua trap vent plug to ensure minimum acid fumes and hence ensures low maintenance of batteries.
- ▶ Low Antimony alloy reduces electrolysis loss, hence require low maintenance.

Ceramic flame arrestor prevents electrical sparks to go in and therefore ensures highest degree of safety for all domestic and office usage.

- ▶ Less power consumption during recharging, due to high charge efficiency and low internal resistance (due to low antimony, purest oxide and electrolyte).
- ▶ Best engineered product to suit with all types of inverter and UPS products.

#### Benefits

- ▶ Values for money
- ▶ Reliable
- ▶ Robust, tolerant to rough handling
- ▶ longer life
- ▶ Better back-up

Battery Name	Battery Model	Capacity at 27C° <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg* (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Power Bank-100	SIG 100	100Ah	410	174	244	29.1	10	24
Power Bank-135	SIG 135	135Ah	512	212	245	41.7	13.5	24
Power Bank-150	SPG 150	150Ah	512	212	245	43.7	15	18
Power Bank-150	SIG 150	150Ah	512	212	245	43.7	15	24
Power Bank-165	SIG 165	165Ah	517	274	251	51.8	16	24
Power Bank-200	SIG 200	200Ah	517	274	251	60	20	24

Load	Inverter/ UPS VA Rating	No. of Batteries	BACKUP DURATION (IN HRS. - MIN.)									
			100 Ah		135 Ah		150 Ah		165 Ah		200 Ah	
			Full Load	50% load	Full Load	50% load	Full Load	50% load	Full Load	50% load	Full Load	50% load
1 Tubelight + 3 Fan + 1 TV + 4 CFL	650 VA	1 No.	1h	2h 40m	1h 40m	3h 50m	1h 50m	4h 20m	2h 10m	5h	2h 40m	6h 10m
2 Tubelight + 2 Fan + 1 PC + 3 CFL	650 VA	1 No.	1h	2h 50m	1h 40m	4h	1h 50m	4h 30m	2h 10m	5h 10m	2h 50m	6h 30m
2 Tubelight + 4 Fan + 1 PC + 3 CFL	850 VA	1 No.	40m	1h 50m	1h	2h 40m	1h 10m	3h	1h 30m	3h 30m	1h 50m	4h 20m
2 Tubelight + 4 Fan + 1 TV + 4 CFL	850 VA	1 No.	40m	2h	1h	2h 50m	1h 10m	3h 10m	1h 30m	3h 40m	1h 50m	4h 30m
2 Tubelight + 7 Fan + 1 TV	1500 VA	2 No.(S)	1h	2h 20m	1h 20m	3h 20m	1h 40m	3h 50m	1h 40m	4h 10m	2h 20m	5h 10m
5 Tubelight + 7 Fan + 1 PC + 7 CFL	1500 VA	2 No.(S)	50m	2h 10m	1h 20m	3h 10m	1h 20m	3h 40m	1h 40m	4h 10m	2h 10m	5h 10m

# TUBULAR BATTERY

## MACROZ SERIES



Product Code : BAT-MZ-TB-01224-00025  
BAT-MZ-TB-01230-00050

### MACROZ SERIES - 25AH, 50AH

The tubular-plate technology enables batteries to deliver a larger amount of consistent, reliable power. They are engineered to deliver increased power and efficiency while maximizing battery life. The tubular-plate batteries perform better on heavy-duty applications. Even the maintenance required with these batteries is quite less. The batteries withstand long and frequent power cuts.

#### Product Features

- ▶ Advanced tubular batteries designed to suit 150VA & 250VA Inverters and UPS.
- ▶ Life - Promise of 1000 cycles of deep discharge.
- ▶ Special tubular plates designed for long life in deep discharge cycle.
- ▶ Superior active material for excellent deep discharge capability.
- ▶ Special alloy for low maintenance of batteries.
- ▶ Angular Ribbed - Poly Ethylene Separator design with low electrical resistance and high porosity for better performance.
- ▶ Ceramic flame arrestor prevents electrical sparks to go in and therefore ensures highest degree of safety for all domestic and office usage.
- ▶ Micro porous aqua trap vent plug to ensure minimum acid fumes which ensures low maintenance of batteries.

#### Benefits

- ▶ Advanced paste provides long shelf life, reduces water loss and results in minimum maintenance.
- ▶ Heavy duty spines for excellent cyclic life and deep discharges.
- ▶ Reliable battery even in high temperature applications.
- ▶ Provides excellent cyclic life with deep cycle discharges.
- ▶ Batteries acceptability to sustains even high rate discharges on heavy loads.

Battery Name	Battery Model	Capacity at 27C° <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Macroz-250	MCT - 250	25Ah	258	177	237	16	2.5	24
Macroz-500	MCT - 500	50Ah	410	174	244	27	5	30

Load	Inverter/UPS VA Rating	No. of Batteries	BACKUP DURATION (IN HRS. - MIN.)			
			25 Ah		50 Ah	
			Full Load	50% load	Full Load	50% load
7 CFL	150 VA	1 No.	1h 50m	3h 40m		
1 Fan + 2 CFL	150 VA	1 No.	1h 40m	3h 10m		
1 Tube light + 5 CFL	150 VA	1 No.	1h 50m	3h 30m		
1 TV + 2 CFL	250 VA	1 No.			1h 50m	3h 40m
1 Fan + 5 CFL	250 VA	1 No.			2h 20m	4h 50m
1 Tube Light + 8 CFL	250 VA	1 No.			2h 40m	5h 20m

Backup time evaluated under standard test conditions.

# TUBULAR BATTERY

## JUMBOZ SERIES



### JUMBOZ SERIES - 150AH

Product Code : BAT-JB-TB-01230-00150

The tubular-plate technology enables batteries to deliver a larger amount of consistent, reliable power. They are engineered to deliver increased power and efficiency while maximizing battery life. The tubular-plate batteries perform better on heavy-duty applications. Even the maintenance required with these batteries is quite less. The batteries withstand long and frequent power cuts.

#### Product Features

- ▶ Heavy duty tubular plate cast at High Pressure
- ▶ Advanced paste with low antimony alloy reduces self discharge.
- ▶ Low Resistance envelope separator provides low internal resistance and reduces chances of stratification.
- ▶ Thick spines for enhanced current flow and lesser corrosion.

#### Benefits

- ▶ Advanced paste provides long shelf life, reduces water loss and results in minimum maintenance.
- ▶ Heavy duty spines for excellent cyclic life and deep discharges.
- ▶ Reliable battery even in high temperature applications. Provides excellent cyclic life with deep cycle discharges.
- ▶ Batteries acceptability to sustains even high rate discharges on heavy loads.

Battery Name	Battery Model	Capacity at 27C° <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg* (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Jumboz-150	JBT 150	150 Ah	518	274	286	58.2	15	30

Load	Inverter/UPS VA Rating	No. Of Batteries	BACKUP DURATION (IN HRS. - MIN.)	
			150 Ah	
			Full Load	50% load
1 Tubelight + 3 Fan + 1 TV + 4 CFL	650 VA	1 No.	1h 50m	4h 40m
2 Tubelight + 2 Fan + 1 PC + 3 CFL	650 VA	1 No.	2h	4h 50m
2 Tubelight + 4 Fan + 1 PC + 3 CFL	850 VA	1 No.	1h 20m	3h 20m
2 Tubelight + 4 Fan + 1 TV + 4 CFL	850 VA	1 No.	1h 20m	3h 20m
7 Tubelight + 7 Fan + 1 TV	1500 VA	2 No.(S)	1h 40m	4h
5 Tubelight + 7 Fan + 1 PC + 7 CFL	1500 VA	2 No.(S)	1h 30m	3h 50m

Backup time evaluated under standard test conditions.

## TUBULAR BATTERY BIG WARRIOR SERIES



Product Code : BAT-WR-TT-01248-00150

BAT-WR-TT-01248-00180

### BIG WARRIOR SERIES - 150AH, 180AH

The tubular-plate technology enables batteries to deliver a larger amount of consistent, reliable power. They are engineered to deliver increased power and efficiency while maximizing battery life. The tubular-plate batteries perform better on heavy-duty applications. Even the maintenance required with these batteries is quite less. The batteries withstand long and frequent power cuts.

#### Product Features

- ▶ Batteries made with high acid volume in each cell.
- ▶ Extra thick gauntlets suitable for Indian Climatic condition
- ▶ Spines cast at high pressure to ensure minimum corrosion for reliability, extra long life and strength
- ▶ DARAMIC separator with high porosity, low electrical resistance and excellent oxidation resistant.
- ▶ Micro-porous ceramic vent plugs with float guide indicators
- ▶ Extra Thick spines and bus bar
- ▶ Leak proof heat Sealed container

#### Benefits

- ▶ Long Shelf Life - Heavy Duty Tubular Plates to give you excellent cyclic life with deep cycle capabilities.
- ▶ Low Maintenance – Minimum topping up frequency.
- ▶ Excellent performance under extreme temperature conditions.
- ▶ Aesthetically designed, low foot print – occupies less space.
- ▶ Thick spices for excellent Discharge performance on heavy loads.
- ▶ Specially designed vent plugs for minimum acid fumes.
- ▶ Float guide indicator - for easy maintenance.
- ▶ Suitable for all types of UPS/HUPS and standby application.
- ▶ Better thermal stability even for high charge and discharges due to high acid volume.

#### Backup time :

Battery Name	Battery Model	Capacity at 27°C <sup>o</sup> <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg* (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Big Warrior-150	SBW 1500	150Ah	503	193	412	61.5	15	48
Big Warrior-180	SBW 1800	180Ah	503	193	412	65	18	48

Load	Inverter/ UPS VA Rating	No. of Batteries	BACKUP DURATION (IN HRS. - MIN.)			
			150 Ah		180 Ah	
			Full Load	50% load	Full Load	50% load
1 Tubelight + 3 Fan + 1 TV + 4 CFL	650 VA	1 No.	2h	4h 40m	2h 30m	5h 40m
2 Tubelight + 2 Fan + 1 PC + 3 CFL	650 VA	1 No.	2h	4h50m	2h 40m	6h 10m
2 Tubelight + 4 Fan + 1 PC + 3 CFL	850 VA	1 No.	1h 20m	3h 20m	1h 40m	4h 0m
2 Tubelight + 4 Fan + 1 TV + 4 CFL	850 VA	1 No.	1h 20m	3h 20m	1h 50m	4h 0m
7 Tubelight + 7 Fan + 1 TV	1500 VA	2 No.(S)	1h 40m	3h 20m	2h 10m	5h
5 Tubelight + 7 Fan + 1 PC + 7 CFL	1500 VA	2 No.(S)	1h 30m	3h 50m	1h 10m	4h 50m

Backup time evaluated under standard test conditions.

## TUBULAR BATTERY BIG CONQUERIOR SERIES



Product Code : BAT-CQ-TT-01248-00150  
BAT-CQ-TT-01248-00180

### BIG CONQUERIOR SERIES - 150AH, 180AH

The tubular-plate technology enables batteries to deliver a larger amount of consistent, reliable power. They are engineered to deliver increased power and efficiency while maximizing battery life. The tubular-plate batteries perform better on heavy-duty applications. Even the maintenance required with these batteries is quite less. The batteries withstand long and frequent power cuts.

#### Product Features

- ▶ Batteries made with high acid volume in each cell.
- ▶ Extra thick gauntlets suitable for Indian Climatic condition
- ▶ Spines cast at high pressure to ensure minimum corrosion for reliability, extra long life and strength
- ▶ DARAMIC separator with high porosity, low electrical resistance and excellent oxidation resistant.
- ▶ Micro-porous ceramic vent plugs with float guide indicators
- ▶ Extra Thick spines and bus bar
- ▶ Leak proof heat Sealed container

#### Benefits

- ▶ Long Shelf Life - Heavy Duty Tubular Plates to give you excellent cyclic life with deep cycle capabilities.
- ▶ Low Maintenance – Minimum topping up frequency.
- ▶ Excellent performance under extreme temperature conditions.
- ▶ Aesthetically designed, low foot print – occupies less space.
- ▶ Thick spices for excellent Discharge performance on heavy loads.
- ▶ Specially designed vent plugs for minimum acid fumes.
- ▶ Float guide indicator - for easy maintenance.
- ▶ Suitable for all types of UPS/HUPS and standby application.
- ▶ Better thermal stability even for high charge and discharges due to high acid volume.

#### Backup time :

Battery Name	Battery Model	Capacity at 27C° <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg* (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Big Conqueror -150	SBT 1500	150Ah	503	193	412	61.5	15	48
Big Conqueror -180	SBT 1800	180Ah	503	193	412	65	18	48

Load	Inverter/ UPS VA Rating	No. of Batteries	BACKUP DURATION (IN HRS. - MIN.)			
			150 Ah		180 Ah	
			Full Load	50% load	Full Load	50% load
1 Tubelight + 3 Fan + 1 TV + 4 CFL	650 VA	1 No.	2h	4h 40m	2h 30m	5h 40m
2 Tubelight + 2 Fan + 1 PC + 3 CFL	650 VA	1 No.	2h	4h50m	2h 40m	6h 10m
2 Tubelight + 4 Fan + 1 PC + 3 CFL	850 VA	1 No.	1h 20m	3h 20m	1h 40m	4h 0m
2 Tubelight + 4 Fan + 1 TV + 4 CFL	850 VA	1 No.	1h 20m	3h 20m	1h 50m	4h 0m
7 Tubelight + 7 Fan + 1 TV	1500 VA	2 No.(S)	1h 40m	3h 20m	2h 10m	5h
5 Tubelight + 7 Fan + 1 PC + 7 CFL	1500 VA	2 No.(S)	1h 30m	3h 50m	1h 10m	4h 50m

Backup time evaluated under standard test conditions.

## TUBULAR BATTERY BAZOOKA SERIES



Product Code : BAT-ST-TB-01236-00120  
 BAT-HP-ST-01236-00150  
 BAT-ST-TB-01236-00180

### BAZOOKA SERIES - 120AH, 150AH, 180AH

The tubular-plate technology enables batteries to deliver a larger amount of consistent, reliable power. They are engineered to deliver increased power and efficiency while maximizing battery life. The tubular-plate batteries perform better on heavy-duty applications. Even the maintenance required with these batteries is quite less. The batteries withstand long and frequent power cuts.

#### Product Features

- ▶ Most compact Tall Tubular battery with global acceptability
- ▶ Extra thick gauntlets suitable for Indian Climatic condition
- ▶ Extra thick spines cast at high pressure to ensure minimum corrosion for reliability, extra long life and strength
- ▶ Leak proof heat Sealed tall PP container
- ▶ DARAMIC separator with high porosity, low electrical resistance and excellent oxidation resistant.
- ▶ Micro-porous ceramic vent plugs with float guide indicators

#### Benefits

- ▶ Long Shelf Life - Heavy Duty Tubular Plates to give you excellent cyclic life with deep cycle capabilities.
- ▶ Excellent performance under extreme temperature conditions.
- ▶ Aesthetically designed, low foot print – occupies less space.
- ▶ Thick spines for excellent Discharge performance on heavy loads.
- ▶ Specially designed vent plugs for minimum acid fumes.
- ▶ Float guide indicator - for easy maintenance.
- ▶ Suitable for all types of UPS/HUPS and standby application.

#### Backup time :

Battery Name	Battery Model	Capacity at 27C° <small>Discharged at C20 rate</small>	Dimensions (+/-3mm)			Weight-Kg* (Gross)	Charging Current-Amp	Warranty** (in months)
			Length	Width	Height			
Bazooka-120	HPT 120	120Ah	503	193	362	52.3	12	36
Bazooka-150	HPT 150	150Ah	503	193	362	57.6	15	36
Bazooka-180	HPT 180	180Ah	503	193	362	61.3	18	36

Load	Inverter/UPS VA Rating	No. of Batteries	BACKUP DURATION (IN HRS. - MIN.)					
			120 Ah		150 Ah		180 Ah	
			Full Load	50% load	Full Load	50% load	Full Load	50% load
1 Tubelight + 3 Fan + 1 TV + 4 CFL	650 VA	1 No.	1h	3h 30m	2h	4h 40m	2h 30m	5h 40m
2 Tubelight + 2 Fan + 1 PC + 3 CFL	650 VA	1 No.	1h 30m	3h 45m	2h	4h 50m	2h 40m	6h 10m
2 Tubelight + 4 Fan + 1 PC + 3 CFL	850 VA	1 No.	1h	2h 30m	1h 20m	3h 20m	1h 40m	4h 10m
2 Tubelight + 4 Fan + 1 TV + 4 CFL	850 VA	1 No.	1h	2h 40m	1h 20m	3h 20m	1h 50m	4h 10m
7 Tubelight + 7 Fan + 1 TV	1500 VA	2 No.(S)	1h 10m	3h	1h 40m	3h 20m	2h 10m	5h
5 Tubelight + 7 Fan + 1 PC + 7 CFL	1500 VA	2 No.(S)	1h	2h 50m	1h 30m	3h 50m	1h 10m	4h 50m

Backup time evaluated under standard test conditions.

## AUTOMATE SERIES

### EMERALD SERIES



Product Code : BAT-EA-AU-01236-00035-01

BAT-EA-AU-01236-00035-02

BAT-EA-AU-01236-00065-01

BAT-EA-AU-01236-00065-02

#### EMERALD SERIES - 35AH, 65AH

Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times. Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times.

AUTOMATE automotive batteries deliver exceptional performance as it hosts the All weather Technology (AWT), a unique feature of AUTOMATE that ensures a reliable and guaranteed performance in all terrains and weather conditions. Be it the hottest desert or the coldest mountain, every battery from the AUTOMATE range is specially designed and engineered to match all types of automobiles and deliver optimum power the most demanding conditions.

#### Product Features

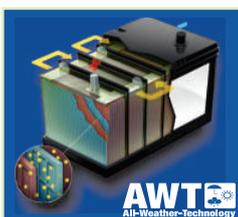
- ▶ **AWT (All Weather Technology)** : Redesigned Hybrid Alloy grid along with reformulated paste ensures battery to withstand abuse at different temperatures, and also tolerates high temperature under bonnet.
- ▶ **Prompt Cranking Always** : Decent cranking ability, along with modified grid profile, & with superior paste.
- ▶ **Reserve Capacity** : Best in the industry as per JIS Standards
- ▶ AUTOMATE is factory charged and sealed, thus eliminating the need for charging or top-up.
- ▶ Higher energy throughout. Three times the cyclic durability of conventional batteries.
- ▶ Higher electrolyte volume above the plates (safety reserve). Side all ribbing.

#### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

#### Product Benefits

- ▶ **Low Maintenance, Less Worries** : Topping –up required less frequently.
- ▶ **Enhanced Life Cycle** : Twin sheet separation, along with ribbed separator profile, reinforced with modified Glass mat, provides best cushion support to the active materials, improves resistance to high vibrations, and thus improves Life Cycle by 40%.
- ▶ **Ready to use** : Factory fresh & ready to use instantly. The shelf life is 50% more than the conventional batteries and thus can be kept in store for longer periods.
- ▶ No top-up required during service life at normal working conditions.
- ▶ With AUTOMATE, you will get ignition even in a low state of charge.
- ▶ Instant starting power even at extreme temperatures.



#### Automotive battery with the power of AWT

The science of AUTOMATE'S AWT - All weather Technology (AWT) is a unique feature of AUTOMATE that ensures a reliable performance in all terrains and weather conditions. Excessive heat and over charging are the two main reasons for a shortened battery life. Heat cause battery fluids to evaporate, thus damaging the internal structure of the battery. All Weather Technology of AUTOMATE ensures a superior performance even in the most demanding conditions. Whatever be the weather, AUTOMATE is sure to deliver uninterrupted power throughout its entire life span.

## AUTOMATE SERIES

### EMERALD SERIES

#### Technical Specifications and Application:

Battery Type	AH	Variant (Warranty in months)	Application
38B20R	35	Emerald (36* Months)	<p>MARUTI:800STD/800AC/Swift/Ritz/800(MPFI)/A-Star/Swift/1.2ltr.ESTE/S X4/Dzire-1.3ltr /Gypsy King/Gypsy/Omni-8 seater/Omni Cargo/Omni ambulance</p> <p>PIAGGIO : Ape 501 /601, Petrol/CNG</p> <p>TATA MOTORS: Indigo/Indigo-Marina(Petrol)</p> <p>TVS : 3-wheelers-TVS King(LPG/CNG)</p> <p>ATUL AUTO : 3-wheelers/Atul Shakti-Gem Cargo/Atul Shakti-Gem PAXX (Petrol/LPG/CNG)</p> <p>BAJAJ AUTO : 3-wheelers-van 4S/RE 4S/FE-4SP van/FE SAC 4S/REDSL-DAC/ FE4S-D VAN/RE4S/RE AR ELECT./RE 2S/RE 2S(DI){Petrol/Diesel/LPG/CNG}</p> <p>DAEWOO : Matiz(Petrol)</p> <p>SIPANI : Sipani (Petrol)</p> <p>PANCHNATH AUTO : 3-Wheelers LGA-340-4STK</p> <p>HYUNDAI : Santro Xing</p> <p>KERALA MOTORS : 3-Wheelers-360/MX400 Series(Self starter){Diesel} /KAL-175(CNG)</p>
38B20L	35	Emerald (36* Months)	<p>CHEVROLET :Spark 1.0ltr.</p> <p>HINDUSTAN MOTORS :HM Lancer/Cedia Select-2.0ltr./Cedia Spirit-2.0ltr /Cedia Sports-2.0ltr./Lancer Lxi 1.5ltr./Lancer Lxi 1.6ltr.(Petrol)</p> <p>HONDA SEIL : Honda City-ZX 1.5ltr./VTEC/New Honda City-1.5ltr.(Petrol) /Jazz(Petrol)</p> <p>MARUTI :Alto/Zen-Estilo/Wagon R/Wagon R(DUO)/Alto K-10/Alto BSIV(Petrol/LPG/CNG)/Zen(Diesel)/EECO /Altura / Baleno</p> <p>NISSAN MOTOR :Micra 1.2ltr.(Petrol)</p> <p>TOYOTA KIRLOSKAR :Corolla(HE,H1,H2,H3 AT,H4AT,H5)/Etios (Petrol)/Innova (G1,G4,V){Petrol}</p> <p>TATA MOTORS:ACE-0.75 TON(Diesel)</p> <p>HYUNDAI: i10 -Petrol</p>
65D26R	65	Emerald (36* Months)	<p>ASHOK LEYLAND NISSAN :Dost-1.5ltr.</p> <p>CHEVROLET :Tavera 2.5ltr.</p> <p>HINDUSTAN MOTORS :Ambassador/Ambassador ISUZU MPFI/Ambassador Grand/Ambassador Avigo(Petrol)</p> <p>ICML :ITL Muv-Rhino Dlx(Diesel) M&amp;M :GIO-0.5T/Maxximo-0.8 T/Load King /XJ T/Camper/Pick-Up CL500 /550MDI /MM540/MM550/MM1ZS/ Commander 650/Marshal Commander /7505/Maxx/Xylo Pick-Up/Bolero CamperPick-Up CL500/550 MDI MM540 /MM550/MM IZS/Army Range 550XD/MAXXLX {UTY} /Bolero/Scorpio STD2WD 7 STR CRDE/SScorpio STD 2WD 9 STR CRDE/ Scorpio M2DI 7 STR/Scorpio M2DI 9 STR/Bolero MDI 110 2WD 7 STR{SUV}</p> <p>TATA MOTORS :Indica DI-STD/Indica DLE(M/S)/Indica DLS(M/S)/Indica DLS TC CRDI/Indica DLG TC CRDI/Indica DIX TC CRDI/Indica Vista Teera/Indica Vista AQUA/IndiCab-DLE(IN)/Indica/CRDI/Marina/Indica Manza/Venture-1.4ltr./ACE-1.0 TON</p>



### TOPAZ SERIES - 35AH, 65AH

Product Code : BAT-TA-AU-01218-00035-01  
 BAT-TA-AU-01218-00035-02  
 BAT-TA-AU-01218-00065-01  
 BAT-TA-AU-01218-00065-02

Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times. Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times.

AUTOMATE automotive batteries deliver exceptional performance as it hosts the All weather Technology (AWT), a unique feature of AUTOMATE that ensures a reliable and guaranteed performance in all terrains and weather conditions. Be it the hottest desert or the coldest mountain, every battery from the AUTOMATE range is specially designed and engineered to match all types of automobiles and deliver optimum power the most demanding conditions.

### Product Features

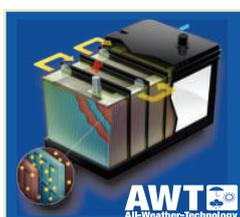
- ▶ **AWT (All Weather Technology)** : Redesigned Hybrid Alloy grid along with reformulated paste ensures battery to withstand abuse at different temperatures, and also tolerates high temperature under bonnet.
- ▶ **Prompt Cranking Always** : Decent cranking ability, along with modified grid profile, & with superior paste.
- ▶ **Reserve Capacity** : Best in the industry as per JIS Standards
- ▶ AUTOMATE is factory charged and sealed, thus eliminating the need for charging or top-up.
- ▶ Higher energy throughout. Three times the cyclic durability of conventional batteries.
- ▶ Higher electrolyte volume above the plates (safety reserve). Side all ribbing.

### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

### Product Benefits

- ▶ **Low Maintenance, Less Worries** : Topping –up required less frequently.
- ▶ **Enhanced Life Cycle** : Twin sheet separation, along with ribbed separator profile, reinforced with modified Glass mat, provides best cushion support to the active materials, improves resistance to high vibrations, and thus improves Life Cycle by 40%.
- ▶ **Ready to use** : Factory fresh & ready to use instantly. The shelf life is 50% more than the conventional batteries and thus can be kept in store for longer periods.
- ▶ No top-up required during service life at normal working conditions.
- ▶ With AUTOMATE, you will get ignition even in a low state of charge.
- ▶ Instant starting power even at extreme temperatures.



### Automotive battery with the power of AWT

The science of AUTOMATE'S AWT - All weather Technology (AWT) is a unique feature of AUTOMATE that ensures a reliable performance in all terrains and weather conditions. Excessive heat and over charging are the two main reasons for a shortened battery life. Heat cause battery fluids to evaporate, thus damaging the internal structure of the battery. All Weather Technology of AUTOMATE ensures a superior performance even in the most demanding conditions. Whatever be the weather, AUTOMATE is sure to deliver uninterrupted power throughout its entire life span.

## AUTOMATE SERIES

### TOPAZ SERIES

#### Technical Specifications and Application:

Battery Type	AH	Variant (Warranty in months)	Application
38B20R	35	Topaz (18 Months)	<p>MARUTI:800STD/800AC/Swift/Ritz/800(MPFI)/A-Star/Swift/1.2ltr.ESTE/S X4/Dzire-1.3ltr /Gypsy King/Gypsy/Omni-8 seater/Omni Cargo/Omni ambulance</p> <p>PIAGGIO : Ape 501 /601, Petrol/CNG</p> <p>TATA MOTORS: Indigo/Indigo-Marina(Petrol)</p> <p>TVS : 3-wheelers-TVS King(LPG/CNG)</p> <p>ATUL AUTO : 3-wheelers/Atul Shakti-Gem Cargo/Atul Shakti-Gem PAXX (Petrol/LPG/CNG)</p> <p>BAJAJ AUTO : 3-wheelers-van 4S/RE 4S/FE-4SP van/FE SAC 4S/REDSL-DAC/ FE4S-D VAN/RE4S/RE AR ELECT./RE 2S/RE 2S(DI){Petrol/Diesel/LPG/CNG}</p> <p>DAEWOO : Matiz(Petrol)</p> <p>SIPANI : Sipani (Petrol)</p> <p>PANCHNATH AUTO : 3-Wheelers LGA-340-4STK</p> <p>HYUNDAI : Santro Xing</p> <p>KERALA MOTORS : 3-Wheelers-360/MX400 Series(Self starter){Diesel} /KAL-175(CNG)</p>
38B20L	35	Topaz (18 Months)	<p>CHEVROLET :Spark 1.0ltr.</p> <p>HINDUSTAN MOTORS :HM Lancer/Cedia Select-2.0ltr./Cedia Spirit-2.0ltr /Cedia Sports-2.0ltr./Lancer Lxi 1.5ltr./Lancer Lxi 1.6ltr.(Petrol)</p> <p>HONDA SEIL : Honda City-ZX 1.5ltr./VTEC/New Honda City-1.5ltr.(Petrol) /Jazz(Petrol)</p> <p>MARUTI :Alto/Zen-Estilo/Wagon R/Wagon R(DUO)/Alto K-10/Alto BSIV(Petrol/LPG/CNG)/Zen(Diesel)/EECO /Altura / Baleno</p> <p>NISSAN MOTOR :Micra 1.2ltr.(Petrol)</p> <p>TOYOTA KIRLOSKAR :Corolla(HE,H1,H2,H3 AT,H4AT,H5)/Etios (Petrol)/Innova (G1,G4,V){Petrol}</p> <p>TATA MOTORS:ACE-0.75 TON(Diesel)</p> <p>HYUNDAI: i10 -Petrol</p>
65D26R	65	Topaz (18 Months)	<p>ASHOK LEYLAND NISSAN :Dost-1.5ltr.</p> <p>CHEVROLET :Tavera 2.5ltr.</p> <p>HINDUSTAN MOTORS :Ambassador/Ambassador ISUZU MPFI/Ambassador Grand/Ambassador Avigo(Petrol)</p> <p>ICML :ITL Muv-Rhino Dlx(Diesel) M&amp;M :GIO-0.5T/Maxximo-0.8 T/Load King /XJ T/Camper/Pick-Up CL500 /550MDI /MM540/MM550/MM1ZS/ Commander 650/Marshal Commander /7505/Maxx/Xylo Pick-Up/Bolero CamperPick-Up CL500/550 MDI MM540 /MM550/MM IZS/Army Range 550XD/MAXXLX {UTY} /Bolero/Scorpio STD2WD 7 STR CRDE/SScorpio STD 2WD 9 STR CRDE/ Scorpio M2DI 7 STR/Scorpio M2DI 9 STR/Bolero MDI 110 2WD 7 STR{SUV}</p> <p>TATA MOTORS :Indica DI-STD/Indica DLE(M/S)/Indica DLS(M/S)/Indica DLS TC CRDI/Indica DLG TC CRDI/Indica DIX TC CRDI/Indica Vista Teera/Indica Vista AQUA/IndiCab-DLE(IN)/Indica/CRDI/Marina/Indica Manza/Venture-1.4ltr./ACE-1.0 TON</p>

# AUTOMATE SERIES

## TRACTOR SERIES



Product Code : BAT-AT-AU-01224-00075

BAT-AT-AU-01224-00090

BAT-AT-AU-01224-00100

### AUTOMATE TRACTOR SERIES - 75AH, 90AH, 100AH

Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times. Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times.

AUTOMATE automotive batteries deliver exceptional performance as it hosts the All weather Technology (AWT), a unique feature of AUTOMATE that ensures a reliable and guaranteed performance in all terrains and weather conditions. Be it the hottest desert or the coldest mountain, every battery from the AUTOMATE range is specially designed and engineered to match all types of automobiles and deliver optimum power the most demanding conditions.

#### Product Features

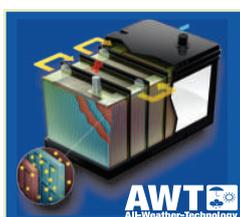
- ▶ **AWT (All Weather Technology)** : Redesigned Hybrid Alloy grid along with reformulated paste ensures battery to withstand abuse at different temperatures, and also tolerates high temperature under bonnet.
- ▶ **Prompt Cranking Always** : Decent cranking ability, along with modified grid profile, & with superior paste.
- ▶ **Reserve Capacity** : Best in the industry as per JIS Standards
- ▶ AUTOMATE is factory charged and sealed, thus eliminating the need for charging or top-up.
- ▶ Higher energy throughout. Three times the cyclic durability of conventional batteries.
- ▶ Higher electrolyte volume above the plates (safety reserve). Side all ribbing.

#### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

#### Product Benefits

- ▶ **Low Maintenance, Less Worries** : Topping –up required less frequently.
- ▶ **Enhanced Life Cycle** : Twin sheet separation, along with ribbed separator profile, reinforced with modified Glass mat, provides best cushion support to the active materials, improves resistance to high vibrations, and thus improves Life Cycle by 40%.
- ▶ **Ready to use** : Factory fresh & ready to use instantly. The shelf life is 50% more than the conventional batteries and thus can be kept in store for longer periods.
- ▶ No top-up required during service life at normal working conditions.
- ▶ With AUTOMATE, you will get ignition even in a low state of charge.
- ▶ Instant starting power even at extreme temperatures.



#### Automotive battery with the power of AWT

The science of AUTOMATE'S AWT - All weather Technology (AWT) is a unique feature of AUTOMATE that ensures a reliable performance in all terrains and weather conditions. Excessive heat and over charging are the two main reasons for a shortened battery life. Heat cause battery fluids to evaporate, thus damaging the internal structure of the battery. All Weather Technology of AUTOMATE ensures a superior performance even in the most demanding conditions. Whatever be the weather, AUTOMATE is sure to deliver uninterrupted power throughout its entire life span.

## AUTOMATE SERIES

### TRACTOR SERIES

#### Technical Specifications

Part No. /Model	Capacity (Ah)	Battery Layout/ Polarity	Battery Dimension $\pm 2$ (mm)			Battery Weight $\pm 5\%$ (kg.)			Warranty Period (Month)	
			L (mm)	W (mm)	H (mm)	DRY. (Kg)	NET. (Kg)	Electrolyte Weight (Kg.)	Free Replacement	Pro-Rata
ATR75D31R	75	R	306	173	225	18.000	23.500	5.500	18 Months	6 Months
ATR90E41L	90	L	409	173	233	21.300	31.000	9.700	18 Months	6 Months
ATR100E41L	100	L	409	173	233	22.500	31.500	9.000	18 Months	6 Months

#### Application chart:

Battery Type	Application
ATR75D31R	<b>Tafe:</b> M1035 / Mf241 / 245 / 5245 Eagle, <b>Swaraj:</b> 724, Sonalika 730 / 732 / 735 / 740, <b>HMT:</b> Zetor 2511, <b>Eicher:</b> 241 / 242 / 312 / 364 / 368, <b>FM-OX, M&amp;M</b> 265DI, 275, <b>Yuvraj, PTL-Swaraj:</b> 722, 724, 733, <b>Escort:</b> FT30 / 35, Josh 325 / 335, Escort Josh 335, Standard 335, 345, <b>ITL:</b> DI730, 732, 735 / <b>Swaraj:</b> 733, 735, 744FE / <b>Tafe:</b> DI 25, 30, MF 1035, MF241, <b>Eagle, 4410 Samrat</b>
ATR90E41L	<b>Eicher Tractors (All Models), HMT:</b> 2511 / 3511 / 4511 / 5911 / 2522 / 352 / 240 / 224 / 920, <b>M&amp;M-Tractors (All Models), New Holland:</b> 3230 / 3630, <b>PTL:</b> 724 / 735, <b>HMT:</b> Zetro / 20T, <b>AI-Tipper, John Deere:</b> 55 / 47 / 37, <b>Sonalika, Escorts:</b> E325 / 335 / 340 / 342 / FT 45 / 60 / 450 / 475, <b>AMW</b> 2518HI / 2523PP / 4923PR / 4018PR
ATR100E41L	<b>M&amp;M:</b> SWARAJ 855; <b>Eicher:</b> Valtra-6100; <b>HMT:</b> 6522 - 65HP / 7511 - 75HP / 5911 - 60HP; <b>Indo Farm:</b> 3055 - 55HP / 3065Di-65HP; <b>John Deere:</b> 5310-55HP / 5410-55HP / 5610 MSWP-75HP; <b>New Holland:</b> 7500 - 75HP; <b>Standard:</b> 460/475

# AUTOMATE SERIES

## TRUCK SERIES



Product Code : BAT-GR-AU-01224-00135

BAT-GR-AU-01224-00150

BAT-HR-AU-01224-00180

### AUTOMATE TRUCK SERIES - 75AH - 180 AH

Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

You can trust AUTOMATE automotive batteries to deliver exceptional performance, massive starting power, rapid recovery and deep cycling capability that today's vehicle demand. Every battery from the AUTOMATE range is specifically designed and perfectly engineered to match the demands of all types of vehicles and to supply optimum power at all times. Today, vehicles are loaded with sophisticated electronics that are delicate and expensive devices which demand a reliable, steady power supply. So why have an inferior power source that would put your high end devices and your vehicle at risk?

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#### Product Features

- ▶ **AWT (All Weather Technology)** : Redesigned Hybrid Alloy grid along with reformulated paste ensures battery to withstand abuse at different temperatures, and also tolerates high temperature under bonnet.
- ▶ **Prompt Cranking Always** : Decent cranking ability, along with modified grid profile, & with superior paste.
- ▶ **Reserve Capacity** : Best in the industry as per JIS Standards
- ▶ AUTOMATE is factory charged and sealed, thus eliminating the need for charging or top-up.
- ▶ Higher energy throughout. Three times the cyclic durability of conventional batteries.
- ▶ Higher electrolyte volume above the plates (safety reserve). Side all ribbing.

#### Operation

- ▶ Noiseless in operation
- ▶ Automatic circuit breaker recovery.

#### Product Benefits

- ▶ **Low Maintenance, Less Worries** : Topping –up required less frequently.
- ▶ **Enhanced Life Cycle** : Twin sheet separation, along with ribbed separator profile, reinforced with modified Glass mat, provides best cushion support to the active materials, improves resistance to high vibrations, and thus improves Life Cycle by 40%.
- ▶ **Ready to use** : Factory fresh & ready to use instantly. The shelf life is 50% more than the conventional batteries and thus can be kept in store for longer periods.
- ▶ No top-up required during service life at normal working conditions.
- ▶ With AUTOMATE, you will get ignition even in a low state of charge.
- ▶ Instant starting power even at extreme temperatures.



#### Automotive battery with the power of AWT

The science of AUTOMATE'S AWT - All weather Technology (AWT) is a unique feature of AUTOMATE that ensures a reliable performance in all terrains and weather conditions. Excessive heat and over charging are the two main reasons for a shortened battery life. Heat cause battery fluids to evaporate, thus damaging the internal structure of the battery. All Weather Technology of AUTOMATE ensures a superior performance even in the most demanding conditions. Whatever be the weather, AUTOMATE is sure to deliver uninterrupted power throughout its entire life span.

**Features:**

- 1 **Ready to use:** Fully charged factory fresh battery
- 2 **Hybrid Alloy Grid:** Specially formed Hybrid Alloy Grid with high concentration of Alloys at the top to give robust performance in tough terrain.
- 3 **Optimized Grid Structure:** Patented plate design for longer life, hassle free current movement and lesser corrosion.
- 4 **High Density Specially formulated paste:** helps us to get fine uniform grain, prevents grid from early corrosion, reduce self- discharge drastically by chemical bonding with grains of calcium, low antimony.
- 5 **Calcium-Low Antimony alloy:** for better charge acceptance, quick recharge ability & henceforth improves life cycle. Suitable for all weather conditions. Extremely low water consumption due to improved Hybrid Alloy & design.
- 6 **Low resistance envelops separators:** along with texturized glass mat–improves vibration durability prevents treeing and internal shorting's, prevents electrolyte stratification and increases current capacity.
- 7 **Reserve Capacity & Cranking Ability:** Best in the industry (As per Japanese Industrial Standards)
- 8 **23 Critical test passed as per JIS/SAE standards**
- 9 **Vibration Resistance:** Robust construction to resist all kind of shock and vibration during service.
- 10 **Designed for Indian climate:** Experimentally engineered alloy to suit the toughest Indian climatic condition.

**Technical Specification:**

Part No. /Model	Capacity (Ah)	Battery Layout/ Polarity	Battery Dimension ± 2(mm)			Battery Weight ± 5% (kg.)			Warranty Period (Month)	
			L (mm)	W (mm)	H (mm)	DRY. (Kg)	NET. (Kg)	Electrolyte Weight (Kg.)	Free Replacement	Pro-Rata
ATR75D31R	75	R	306	173	225	16.700	23.500	6.800	18 Months	6 Months
ATR90E41L	90	L	409	173	233	20.300	28.500	8.200	18 Months	6 Months
ATR100E41L	100	L	409	173	233	22.500	29.500	7.000	18 Months	6 Months
AHC135G51R	135	R	510	221	246	30.300	41.700	11.400	18 Months	6 Months
AHC150G51R	150	R	510	221	246	31.900	45.300	13.400	18 Months	6 Months
AHC180H52R	180	R	518	274	248	39.700	56.700	17.000	18 Months	6 Months

## AUTOMATE SERIES

### TRUCK SERIES

#### Application chart:

Battery Type	Application
<b>ATR75D31R</b>	<b>Tafe:</b> M1035 / Mf241 / 245 / 5245 Eagle, <b>Swaraj:</b> 724, Sonalika 730 / 732 / 735 / 740, <b>HMT:</b> Zetor 2511, <b>Eicher:</b> 241 / 242 / 312 / 364 / 368, <b>FM-OX, M&amp;M</b> 265DI, 275, <b>Yuvraj, PTL-Swaraj:</b> 722, 724, 733, <b>Escort:</b> FT30 / 35, Josh 325 / 335, Escort Josh 335, Standard 335, 345, <b>ITL:</b> DI730, 732, 735 / <b>Swaraj:</b> 733, 735, 744FE / <b>Tafe:</b> DI 25, 30, MF 1035, MF241, Eagle, 4410 <b>Samrat</b>
<b>ATR90E41L</b>	<b>Eicher Tractors (All Models), HMT:</b> 2511 / 3511 / 4511 / 5911 / 2522 / 352 / 240 / 224 / 920, <b>M&amp;M-Tractors (All Models), New Holland:</b> 3230 / 3630, <b>PTL:</b> 724 / 735, <b>HMT:</b> Zetro / 20T, <b>AI-Tipper, John Deere:</b> 55 / 47 / 37, <b>Sonalika, Escorts:</b> E325 /335 / 340 / 342 / FT 45 / 60 / 450 / 475, <b>AMW</b> 2518HI / 2523PP / 4923PR / 4018PR
<b>ATR100E41L</b>	<b>M&amp;M:</b> SWARAJ 855; <b>Eicher:</b> Valtra-6100; <b>HMT:</b> 6522 - 65HP /7511 - 75HP/ 5911-60HP; <b>Indo Farm:</b> 3055 - 55HP/3065Di-65HP; <b>John Deere:</b> 5310-55HP/ 5410-55HP/ 5610 MSWP-75HP; <b>New Holland:</b> 7500 - 75HP; <b>Standard:</b> 460/475
<b>AHC135G51R</b>	<b>Tata Motors :</b> Tata-251TC, 2516, 2518, Bus-LP1109, LP 909, LPT 1109, SA 1212, SE 1613, LPT 2516, Super Turbo, LPY 2515CMVR; <b>Action Construction :</b> Loader, ICV-TAG/ HMV6X6/ RV4X4/ Stallion4X4/ FAT6X6/ Dumper ALRD20/ Haulage-beaver ; <b>Asia Motor Works:</b> 4323/ 49306X4/ 4033/ Haulage 2518/4018/ Tipper 2523; <b>Eicher Motors :</b> HCV-20.15/ 20.16/ 30.25/ 33.25/ BMTC/ Hercules-36.31/ Mega 40.40; <b>Jessop :</b> Jessop - dumper; <b>Man Force Truck :</b> Man Force-CLA 16L,180, CLA25, 180, CLA40L 18 ; <b>Terex Vectra :</b> Terex Vectra-All Models
<b>AHC150G51R</b>	<b>Tata Motors :</b> Tata Def SD 1015 Tc/ Tata Def LPT 1615 Tc/ Tata Def Lpta 1212 Tc/ Tata Def Lpta 1621 Tc/ Tata Tipper LPK 1615 Tc/ Tata Tipper LPK 2516 Tc/ Tata Tipper SK 1615 Tc/ Tata Truck Tractor LPS 3015 Tc / Tata Truck Tractor LPS 3516 Tc/ Tata Truck Tractor LPS 4021 Tc / LPK 1618 Bsii Tipper 4X2 / LPK 1618 Tc Trailer Transit Mixer/ Tata Bus LP 709 E / Marcopolo Bus LP0 1612/ 59 BSii RE/ Marco Polo Star Bus/ LP0 1615/62LE / Tata Bus LP / LP0 1510 Bsii / Tata Bus LP/ LP0 1512 TC BSii / Tata Bus LP / LP0 1512 TC Army Bsii/ Tata Bus LP0 1510 CNG/ LP 1510 59 CMVR Bsii/ LP0 916 TC RHD/ LPT 1518 TC BSii/ Tata LP0 1616 TC/ Tata Truck LP0 1613 TC/ Tata Truck LPT 1613/ Tata Truck LPT 1613 TC ABS/ Tata Truck LPT 1615 TC/ Tata Truck LPT 2515 TC EX BSii/ Tata Truck LPT 2516 TC/ Tata Truck SE 1613 TC/ LP0 1512/ LP0 1510 Webler Modell/ LPK 2518TC 6 X4 BSii Tipper/ LPS2530 - Novus / Tata 1623 BSii/ LP0 916TC/ LP 1615 697 BSiii/ LP 1512 TC/ LPT 1613 62 TC ; <b>Ashok Layland :</b> LYNX, Cheetah-Hino/ Cheetah-AL/ Viking-Hino/ Viking-AL/ Reslf 6EE4/ Cruiser-RE/ Panther-RE/ Vestibule ; <b>Caterpillar India :</b> CAT-2021/ 424B-Loader; <b>Swaraj Mazda:</b> Bus /ASUZU LT 134-C/ ISUZU SKS Executive Bus ; <b>Jessop Jessop -</b> Dumper Eicher Motors Eicher- 40.40; <b>Creative Marketing Solution :</b> 2021 Loader ; Escorts Construction Equipment IF-10, 12, 15, HK17, RT20, 30, 40; <b>Class India :</b> Class Harvester Combines-CT-60; <b>Greaves Cotton :</b> Vibratory Compactor ; <b>Telco :</b> Hydraulic Excavator EX300/ EX350V Volvo T-4361/ SD110/ DD90 ; <b>Ural :</b> U555717(6X6) Tipper/UF3140 (8X4) Tipper/ (4040CR DE BSIII)
<b>AHC180H52R</b>	<b>Tata Motors :</b> SD 1015TC 36 BSII CAB / SD 1015TC 42 BSII CAB / SD 1015TC 36 BSII CAB/ SD 1015TC 42 BSII CAB/ SD 1015TC 42 CAB LHD / LP0 1318 LHD/ LP0 1316 LHD / LPT 1313 / LP01318 TC Bsii/ LPTA 713TC 32 BSii T-CAB/ LPTA 713TC 32 BSii COWL/ LPTA 713TC 32 CAB LHD/ LPTA 713TC 32 BSii T-CAB / LPTA 713TC 32 T-CAB/ LPTA 715TC 32 BSii T-CAB / Tata Bus LP0 1610 Tc; <b>Ashok Layland :</b> Fire Engines/ Airport -CFT 6X6, RTV 4X4; <b>Hindustan Motors :</b> HM CKD - Trucks And Buses ; <b>Eicher Motors :</b> RE-SLBUS/ Eicher Terra 20 HDR ; <b>Escorts Construction Equipment :</b> Vibratory Compactor 2420/ Vibratory Compactor ES5250 ; <b>Swaraj Mazda :</b> Swaraj Fire Tender ; <b>URAL :</b> UF11B (FE)/UF11R(RE) Bus

## POWER ACCESSORIES

Su-Kam's wide range of easy-to-use and reliable power accessories have been designed keeping in mind the customers' various needs to increase the life of appliances, store them easily and save them from any unwarranted harm during maintenance .

To meet all the aforementioned needs, Su-Kam has designed power accessories such as Power Guard that saves appliances from sudden voltage and current surges; Battery Equalizer that helps to increase the life of batteries by balancing them; Battery Water Topping Kit that enables easy water topping of batteries preventing acid spillages and burns; Battery Trolley to provide an easy, contemporary, neatly designed storage space for batteries.

All these product accessories are highly essential in the day-to-day life of a customer in fulfilling his power back up needs; it makes his life easier by giving him easy solutions on a common platform.

# POWER ACCESSORIES

## POWER GUARD



Product Code : PWR-BL-TD-110AA-00006  
 PWR-RD-TD-110AA-00006  
 PWR-WH-TD-110AA-00006  
 PWR-YL-TD-110AA-00006

### POWER GUARD - 6Amp

Driven by Microprocessor Chip Technology, Su-Kam's Power Guard increases efficiency and acts as an insurance against power fluctuations that could damage electrical appliances and electronic devices in the long run. The functionality of Power Guard is to detect and protect electrical appliances and electronic devices against high voltage, low voltage, surges, spikes and frequency variations. Power Guard enables stabilized voltage supply to the connected electrical appliance and electronic device, increasing its longevity and minimizing the risk of damage.

#### Product Features

- ▶ **Universal Plug-in** : Adaptable to American plug - 2/3 Flat Pin, adaptable to UK plug - BS1363 and adaptable to Indian plug - Round Pin BS 546 (Operates both at 110V & 220V) No adapters required thus no additional cost incurred.
- ▶ **Portable Technology** : Universal Reception System install.
- ▶ **Voltage Cut-off Display (VCD)**: Displays voltage cut-off and voltage supply - Auto Restoration. It also rescues electrical appliance from breakdown and acts as insurance against power fluctuation.

#### Product Features

- ▶ **Zero Voltage Switching (ZVS)**: This acts like a life insurance for electrical appliances. It also guarantees longevity of the components inside the electrical appliances.
- ▶ **Zero Power Consumption (ZPC)**: It reduces the energy consumption by 11.5%.

TECHNICAL SPECIFICATIONS		INSTALLATION DIRECTIONS	
Operating VoltageRange	110Vto270VAC	<ul style="list-style-type: none"> <li>▶ Plug input power cord from electrical appliance into Power Guard socket.</li> <li>▶ Plug Power Guard into a socket having an earthing system.</li> <li>▶ Switch ON the power supply.</li> <li>▶ Lighting of LED 3 indicates voltage supply is in specified safe limits &amp; electrical appliance is functional.</li> <li>▶ Lighting of LED 2 indicates that input supply is high and Power Guard has disconnected &amp; saved the appliance.</li> <li>▶ Lighting of LED 1 indicates that voltage input supply is low &amp; Power Guard has disconnected &amp; saved the appliance.</li> </ul>	
Customised Operating VoltageRange	Other ranges available onrequest		
OperatingFrequency(50Hz)	45to55Hz		
OperatingFrequency(60Hz)	55to65Hz		
SuperiorSpikeProtection SurgeCurrent(8/20µS)	Available 2500A		
OperatingAmbient	0°Cto45°C		
RelativeHumidity	95%(Non-Condensing)		
Dimensions(mm)	49.1x53.5x111(WXDXH)		
Weight(Grams)	92		

## POWER ACCESSORIES

### POWER GUARD



#### POWER GUARD - 16Amp

Driven by Microprocessor Chip Technology, Su-Kam's Power Guard increases efficiency and acts as an insurance against power fluctuations that could damage electrical appliances and electronic devices in the long run. The functionality of Power Guard is to detect and protect electrical appliances and electronic devices against high voltage, low voltage, surges, spikes and frequency variations. Power Guard enables stabilized voltage supply to the connected electrical appliance and electronic device, increasing its longevity and minimizing the risk of damage.

#### Product Features

- ▶ **Universal Plug-in :** Adaptable to American plug - 2/3 Flat Pin, adaptable to UK plug - BS1363 and adaptable to Indian plug - Round Pin BS 546 (Operates both at 110V & 220V) No adapters required thus no additional cost incurred.
- ▶ **Portable Technology :** Universal Reception System install.
- ▶ **Voltage Cut-off Display (VCD):** Displays voltage cut-off and voltage supply - Auto Restoration. It also rescues electrical appliance from breakdown and acts as insurance against power fluctuation.

Product Code : PWR-RD-TD-180AC-00016  
 PWR-BL-TD-180AC-00016  
 PWR-WH-TD-180AC-00016  
 PWR-YL-TD-180AC-00016

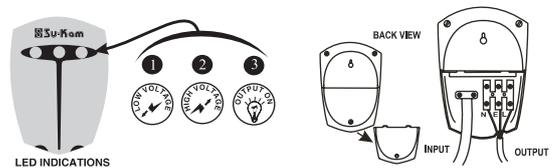
#### Product Features

- ▶ **Zero Voltage Switching (ZVS):** This acts like a life insurance for electrical appliances. It also guarantees longevity of the components inside the electrical appliances.
- ▶ **Zero Power Consumption (ZPC):** It reduces the energy consumption by 11.5%.

#### TECHNICAL SPECIFICATIONS

Operating VoltageRange	180Vto260VAC
Customised Operating VoltageRange	Other ranges available onrequest
OperatingFrequency(50Hz)	45to55Hz
OperatingFrequency(60Hz)	55to65Hz
SuperiorSpikeProtection SurgeCurrent(8/20µS)	Available 2500A
OperatingAmbient	0°Cto45°C
RelativeHumidity	95%(Non-Condensing)
Dimensions(mm)	81.5x37.5x115(WXDXH)
Weight(Grams)	300

#### INSTALLATION DIRECTIONS



- ▶ First tightly connect the input power cord of the electrical appliance to the output connecting terminal of the Power Guard 16 amp.
- ▶ Next provide a good, tight, secure connection, free of any play to the input lead-cable wire of the Power Guard to the AC mains having an earthing system. Do ensure the earthing.
- ▶ Switch on the power supply only after making the above mentioned tight connections
- ▶ Lighting of LED 3 indicates voltage input supply is in specified safe limits & electrical appliance is functional.
- ▶ Lighting of LED 2 indicates that input supply is high and Power Guard has disconnected & saved the appliance.
- ▶ Lighting of LED 1 indicates that voltage input supply is low & Power Guard has disconnected & saved the appliance.

## POWER ACCESSORIES

### BATTERY WATER TOPPING KIT



#### BATTERY WATER TOPPING KIT - 1 Battery, 2 Battery & 4 Battery

Su-Kam's Battery Water Topping Kit makes the tedious task of battery water filling, a safe, easy and reliable process. Consisting of automatic shut-off valves, interconnected with tubing which replace the existing vent caps, this kit not only saves time and labour cost but also ensures extended battery life and safety from acid burns and spillages.

#### Product Features

- ▶ **Uniform Electrolyte Level :** The Battery Water Topping Kit ensures equal electrolyte level in all the cells through pressure valves which shut on attaining the required level of the electrolyte.
- ▶ **De-gas Chamber :** The valve allows each cell to vent gases effectively. Gases leave the cell through the de-gas chamber separated from the incoming water.
- ▶ **Single Point Multi Feeder :** Battery Water Topping Kit fills water accurately in multiple cells with the help of one single point feeder tube.
- ▶ **Clampless Tube :** Easy to install with high flexibility and maneuverability.

#### Operation

- ▶ **Important:** Batteries may only be filled after charging.
- ▶ Insert the Hand Pump into a bottle of distilled water. The bottle should always be kept at a level/height which is below the water topping system's valves.
- ▶ Prime bulb by squeezing until filled with water.
- ▶ Once bulb is primed remove the dust cover from the battery watering system. Mate the couplers.
- ▶ Squeeze the bulb with firm pressure to pump water into the battery cells. When the bulb becomes firm, all cell are full.
- ▶ Immediately disconnect the couplers. Replace the dust cover.



Product Code : LA Single -BAT-WK-00-00000-00001  
 LA Double -BAT-WK-00-00000-00002  
 LA Four -BAT-WK-00-00000-00003  
 TT Single -BAT-WK-00-00000-00004  
 TT Double -BAT-WK-00-00000-00005  
 TT Four -BAT-WK-00-00000-00006

#### Benefits

- ▶ **Cost Savings :** It saves your labor cost. After installing your Battery Water topping system you will realize other cost benefits including extended battery life, increased performance, cleaner floors, equipment and battery tops.
- ▶ **Safety From Burn :** Fill batteries without having to remove the vent covers. No Battery Acid Burns, Ruined clothing & noxious fumes.
- ▶ **Extended Battery Life & Performance :** A properly watered battery lasts longer and performs better. Overfilling a battery results in loss of acid, while charging with low electrolyte levels will result in permanent damage to the lead plates. Both will result in loss of capacity and life expectancy.
- ▶ **Time Saving Convenience :** Snap on/snap off water connections and fast filling turn the often ignored task of watering batteries into a quick, simple task allowing you to fill each battery in 60 seconds or less!
- ▶ **Install It And Forget It :** No need to remove the Water topping kit once it is installed with Battery. You can keep this battery from 0 to 65 degree Celsius without any fear of degradation of the assembly.



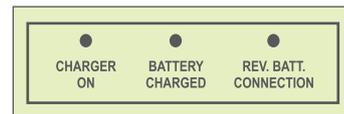
LA Battery



Tubular Battery



Tubular Battery



Product Code : BTC-OT-00-012AA-00010  
BTC-OT-00-024AA-00009

**BATTERY CHARGER - 12V, 24V 48V to 96V**

Su-Kam's SMPS based, multistage, pure DC battery chargers are microprocessor controlled for fast and accurate charging of all deep-cycle batteries. A wide AC input voltage range enables proper delivery of a full three-stage charge, even when charging from less than perfect quality grid power or generator power.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

**Product Features**

- ▶ Switching mode control (SMPS) based design
- ▶ Charges batteries with constant voltage constant current
- ▶ Protection against the reverse polarity of battery
- ▶ Automatic over current limit
- ▶ Alphanumeric LCD panel for user-friendly interface for 48V systems and LED display for 12V and 24V systems.
- ▶ SMPS based Constant Current Constant Voltage Charger Working at 50KHZ
- ▶ User-friendly operation and High efficiency
- ▶ Covered terminal block with screw terminals for safe and easy connection.
- ▶ Over voltage, under voltage and over current protection
- ▶ Easy battery connection with clip leads
- ▶ Intelligent Thermal Management

**Displays**

- ▶ Multifunction LCD display.
- ▶ Display show operation states- for operation, state of charge, fault message.

**Application**

- ▶ Sealed Maintenance Free Inverter and UPS Batteries
- ▶ Lead Acid Inverter and UPS Batteries
- ▶ Automotive Batteries

**Approvals & Certifications**

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent. Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

**Technical Specifications**

Model	BATTERY CHARGER	
Capacity	12 VDC	24 VDC
Input Voltage	70-140V ± 10V/60Hz Single Phase 120-300V + 10V/50Hz/60Hz Single Phase	
Nos. of Batteries	01	02
Output Current	10 Amp ± 1 Amp.	9 Amp ± 1 Amp.
Control Mode	Switching mode	
Control Method	Constant Voltage and Current	
Boost/Float Voltage	14.1 VDC ± 0.1 VDC	28.1 VDC ± 0.1 VDC
Thermal	Automatic thermal protection incase of high temperature Auto restart in safer region	
Reverse Battery Protection	Provided by 15A DC Fuse fitted at rear panel	
Ambient Temperature	0° ± 40°C	
Storage Temperature	0° ± 60°C	
Relative Humidity	90%	
Dimensions (WxDxH) in mm	120 x 320 x 80	
Weight	1.55	1.88

Note: Specifications are subject to change without any prior notice



**BATTERY CHARGER - 48V to 96V**

Su-Kam's SMPS based, multistage, pure DC battery chargers are microprocessor controlled for fast and accurate charging of all deep-cycle batteries. A wide AC input voltage range enables proper delivery of a full three-stage charge, even when charging from less than perfect quality grid power or generator power.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

**Product Features**

- ▶ Switching mode control (SMPS) based design
  - ▶ Charges batteries with constant voltage constant current
  - ▶ Protection against the reverse polarity of battery
  - ▶ Automatic over current limit
  - ▶ Alphanumeric LCD panel for user-friendly interface for 48V systems and LED display for 12V and 24V systems.
  - ▶ SMPS based Constant Current Constant Voltage Charger Working at 50KHZ
  - ▶ User-friendly operation and High efficiency
  - ▶ Covered terminal block with screw terminals for safe and easy connection.
  - ▶ Over voltage, under voltage and over current protection
  - ▶ Easy battery connection with clip leads
- Intelligent Thermal Management

**LCD MESSAGES**

SU-KAM WELCOMES YOU	MAIN VOLTAGE
MAIN FREQUENCY	BATTERY VOLTAGE
BATTERY CURRENT	MAINS FUSE BLOWN

**Displays**

- ▶ Multifunction LCD display.
- ▶ Display show operation states- for operation, state of charge, fault message.

**Application**

- ▶ Sealed Maintenance Free Inverter and UPS Batteries
- ▶ Lead Acid Inverter and UPS Batteries
- ▶ Automotive Batteries

**Approvals & Certifications**

- ▶ Certified by ETDC & CE
- ▶ Technology & Design Patent. Copyrights & Trademark.
- ▶ Manufactured according to ISO 9001 and ISO 14001.
- ▶ R&D approved by Govt. of Science & Technology.

**Technical Specifications**

Model	BATTERY CHARGER
Capacity	48 VDC
Input Voltage	70-140V ± 10V/60Hz Single Phase 140-285V + 10V/50Hz/60Hz Single Phase
Nos. of Batteries	04
Output Current	8 Amp ± 1 Amp.
Control Mode	Switching mode
Control Method	Constant Voltage and Current
Boost/Float Voltage	62 VDC ± 0.5 VDC
Thermal	Automatic thermal protection incase of high temperature Auto restart in safer region
Reverse Battery Protection	Provided by 15A DC Fuse fitted at rear panel
Ambient Temperature	0° ± 40°C
Storage Temperature	0° ± 60°C
Relative Humidity	90%
Dimensions (WxDxH) in mm	2600 x 242 x 114
Weight (Kg)	3.275

Note: Specifications are subject to change without any prior notice



Product Code : BTE-EQ-00-02400-00000  
 BTE-BU-00-04800-00000  
 BTE-BU-00-00800-00000

**BATTERY EQUALIZER - 12V, 24V, 48V**

The Su-Kam Battery Equalizer is a unique product from the Su-Kam stable that equalizes two or more batteries in a battery bank connected in series and corrects their imbalances. Battery Equalizer enhances the battery's life by preventing under charging and over charging of the batteries. The Su-Kam Battery Equalizer is a patented technology which provides perfect voltage matching of the batteries during both charge and discharge, bringing longer life cycle, lower rates of failure and easy maintenance.

**Principle :** Su-Kam HUPS are innovative two in one products which eliminate the need to have separate power backup system for home equipment & computers.

**Product Features**

- ▶ Active equalization technique based on flash micro-controller.
- ▶ Reduces the battery replacement, which again greatly reduces the cost.
- ▶ Easy to install with batteries connected in series.
- ▶ Suitable for 'N' numbers of batteries by utilizing multiple units together.
- ▶ Operates in all three modes: battery charging, discharging or in idle mode.
- ▶ Appropriate for Gel, Sealed and AGM Lead Acid batteries.
- ▶ Works with conventional flooded lead acid batteries and SMF batteries.
- ▶ Extends battery life and run time.
- ▶ Prevents over and under charge due to battery imbalance.

**Benefits**

- ▶ When there are more than 2 batteries in the series, it will equalize the voltage in them and ensure they do not have different voltages.
- ▶ Protects your batteries from undercharging and overcharging, which reduces their working life.
- ▶ Extends battery life and capacity appreciably.
- ▶ Reduces the frequency of battery replacement, thus reducing cost and saving money.
- ▶ Easy to install with batteries connected in series.
- ▶ Operates in all 3 modes: battery charging, discharging or in idle mode.
- ▶ Compact size, low weight.

**Application**

- ▶ Battery Bank
- ▶ Electric Vehicles
- ▶ Solar Systems
- ▶ Generators
- ▶ Trucks & Buses etc



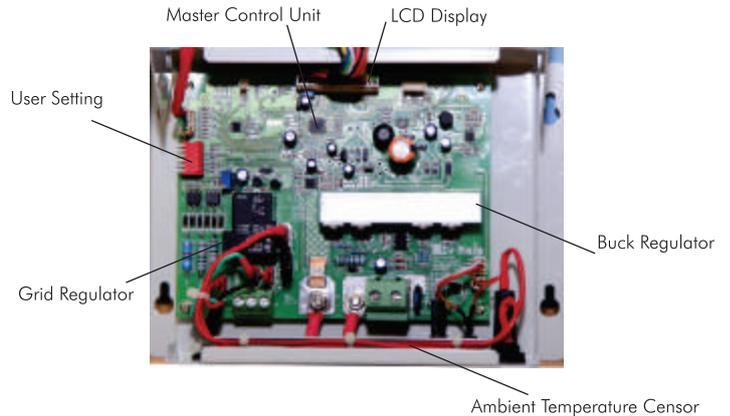
**BEQ 24V**



**BEQ 48V**

# POWER ACCESSORIES

## SOLAR CON



Product Code: SCC-SP-OT-01200-00016

**PWM Range - 12V/16A**

Su-Kam's SolarCon hybrid Solar Charge Controller is an intelligent device with inbuilt intelligent technology for utilization of solar power optimally.

### Working Principle

Solarcon hybrid Solar Charge Controller solution overcomes the challenges in the existing solutions. It can be connected with any existing Home UPS/Inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and still solar power is available to charge the battery, it automatically disconnects the mains from the inverter and the inverter starts working in backup mode now the power is supplied from battery and solar. This helps in utilizing the solar power generated optimally.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

### Features

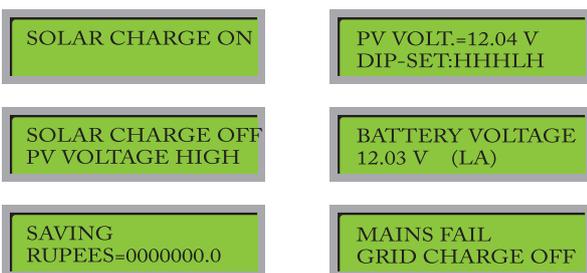
- High efficient Series PWM charging, increases battery life and improves the solar system performance
- Widely used, automatically recognizes day/night
- Graphics dot-matrix LCD screen & HMI (human-machine interface) with 4 buttons, integrated menu display & operation
- Humanized design of browser interface, for convenience of operation
- Full control parameters setting and modification, diversified load control mode
- Gel, Sealed and Flooded battery type options -SMF/TT/LA batteries

- Adopt temperature compensation, correction algorithm for charging and discharging parameters automatically and improves battery life
- Reverse protection: any combination of solar module and battery

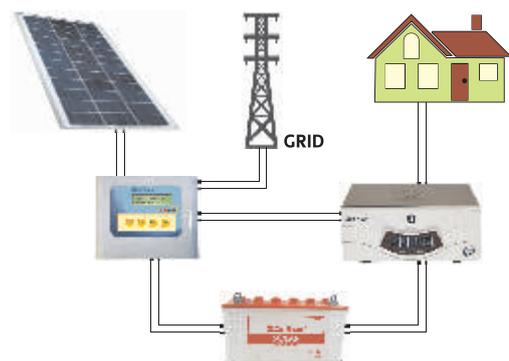
### Electronic Protection Updates

- Short Circuit through Fuse
- Reverse Battery Mode with LED Indication
- Reverse PV array with LED Indication
- Surges/ Spikes protection with MOV
- No mechanical switch, uses MOSFET as an electronic switch
- Prevent overheating, overcharging, over discharging, over

### LCD DISPLAY DIAGRAM



### INSTALLATION DIAGRAM



# POWER ACCESSORIES

## SOLAR CON

### Displays (Single Line)

- Backup Mode and Mains Mode
- Battery Voltage
- Solar Status
- Rupees Saving
- Mains Low & High
- Battery Low & High

### Operations/ Options

- Input range: 90V-300V±20V
- Automatic Changeover Solar/Grid Battery
- Short circuit through Fuse

### Applications

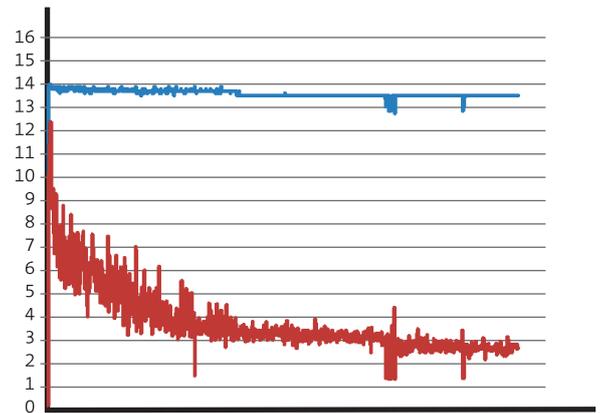
- Any Existing Inverter/ HUPS
- New Inverter/HUPS

### Convenience

- Installation with ease
- Electricity bill reduction
- Compatible with any HUPS/Inverter

Existing System		System to be installed	
Existing HUPS System	Existing Battery	PV Panel	Solar Con
250 VA	50Ah TT	80W-150W	12V/16A
400/450 VA	100Ah TT	80W-150W	12V/16A
650 VA	135Ah-200Ah TT	100W-300W	12V/16A
850 VA	135Ah-200Ah TT	100W-300W	12V/16A
850 VA	135Ah-200Ah LA	100W-300W	12V/16A
1000 VA	135Ah-200Ah LA	100W plus	12V/16A
1050 VA	135Ah-200Ah LA	100W plus	12V/16A

The battery being charged with PV current=16 A current with PV voltage =16 V. Mains not available



### LOAD CHART

	250 VA	450 VA	650 VA	850 VA	1000 VA	1050 VA
Television	1	1	1	1	1	1
Tublight	1	1	2	3	3	3
Fans	-	1	3	3	3	3
CFL	2	5	2	4	6	7

## POWER ACCESSORIES

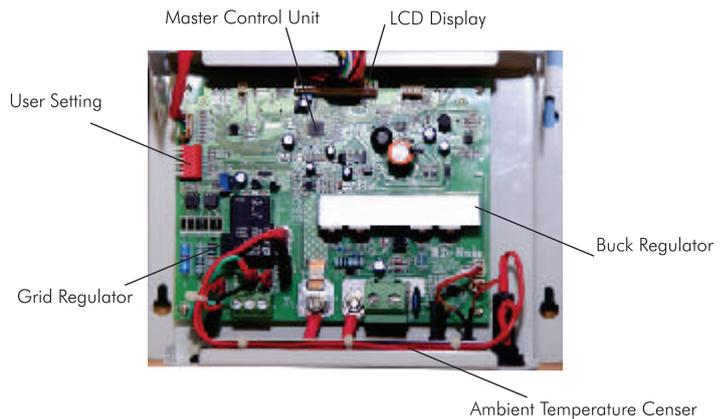
### SOLAR CON

#### TECHNICAL SPECIFICATIONS

Nominal Battery Voltage	12 V (Single Battery)
Recommended Home UPS / Inverter Range	Upto 1000VA/12V
Minimum Recommended Battery	100Ah - 200Ah
Maximum PV panel rating	36 cell Polycrystalline/monocrystalline
	300 Wp
	Imp: $\leq 16A$
Float voltage	13.7 V $\pm$ 2% at charger's o/p terminal
Equalization Voltage	Bulk Voltage + 1V
Automatic Temperature compensation in	Provided
Auto Restart after PV High Current	3.5 minutes. $\pm$ 20 sec
Input Range	90V-300V $\pm$ 20V
Automatic Changeover Solar / Grid / Battery	Grid power connects to inverter when battery voltage 80% / 60% / 40% / 20% per battery (As per setting of selection Switch) if grid is within the specified range.
Short Ckt. (Mains Mode)	Yes (through Fuse)
Reverse Battery	Yes with LED indication
Reverse PV array	Yes with LED indication
Surge/ spike protection	Yes through MOV
Backup Mode & Mains Mode	Battery Voltage / Solar Status / Rupees Saving / Mains Low / Mains High / Battery Low / Battery High
Operating Temperature Range	0°C to + 55°C
Dimensions (WxDxH) in mm	215mm X 156mm X 68mm
Weight ( $\pm$ ) 100 gm.	1.3 Kg

# POWER ACCESSORIES

## SOLAR CON



### PWM Range - 24V/16A

Su-Kam's SolarCon hybrid Solar Charge Controller is an intelligent device with inbuilt intelligent technology for utilization of solar power optimally.

### Working Principle

Solarcon hybrid Solar Charge Controller solution overcomes the challenges in the existing solutions. It can be connected with any existing Home UPS/Inverter and convert it into a solar powered system. It controls the mains supply to the inverter so that when the battery is fully charged and still solar power is available to charge the battery, it automatically disconnects the mains from the inverter and the inverter starts working in backup mode now the power is supplied from battery and solar. This helps in utilizing the solar power generated optimally.

When the battery is discharged below the pre-defined user settable limit and mains is present, it is connected to the inverter so that the load is bypassed to mains and the battery charging can take place.

### Features

- High efficient Series PWM charging, increases battery life and improves the solar system performance
- Widely used, automatically recognizes day/night
- Graphics dot-matrix LCD screen & HMI (human-machine interface) with 4 buttons, integrated menu display & operation
- Humanized design of browser interface, for convenience of operation
- Full control parameters setting and modification, diversified load control mode
- Gel, Sealed and Flooded battery type options -SMF/TT/LA

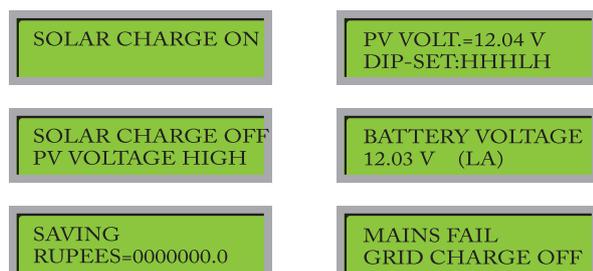
batteries

- Adopt temperature compensation, correction algorithm for charging and discharging parameters automatically and improves battery life
- Reverse protection: any combination of solar module and battery

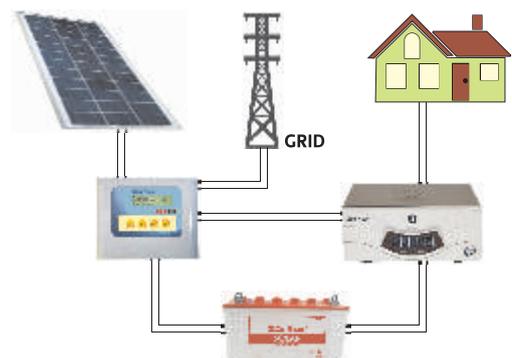
### Electronic Protection Updates

- Short Circuit through Fuse
- Reverse Battery Mode with LED Indication
- Reverse PV array with LED Indication
- Surges/ Spikes protection with MOV
- No mechanical switch, uses MOSFET as an electronic switch
- Prevent overheating, overcharging, over discharging, over

### LCD DISPLAY DIAGRAM



### INSTALLATION DIAGRAM



# POWER ACCESSARIES

## SOLAR CON

### Displays (Single Line)

- Backup Mode and Mains Mode
- Battery Voltage
- Solar Status
- Rupees Saving
- Mains Low & High
- Battery Low & High

### Applications

- Any Existing Inverter/ HUPS
- New Inverter/HUPS

### Convenience

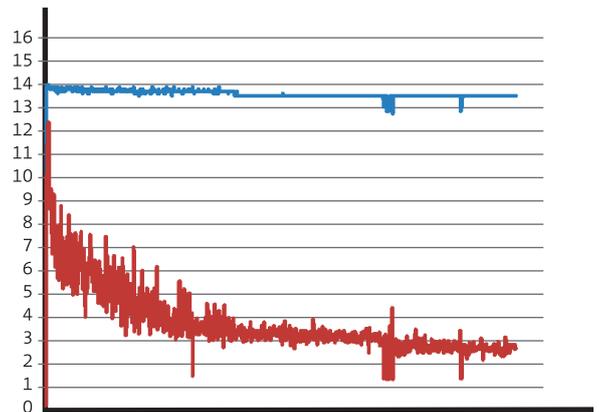
- Installation with ease
- Electricity bill reduction
- Compatible with any HUPS/Inverter

### Operations/ Options

- Input range: 90V-300V±20V
- Automatic Changeover Solar/Grid Battery
- Short circuit through Fuse

Existing System		System to be installed	
Existing HUPS System	Existing Battery	PV Panel	Solar Con
1400 VA	135Ah-200Ah LA	250W/24V or 100W/12Vx2	12V-24V/16A
1400 VA	135Ah-200Ah TT	250W/24V or 100W/12Vx2	12V-24V/16A
1500 VA	135Ah-200Ah LA	250W/24V or 100W/12Vx2	12V-24V/16A
1500 VA	135Ah-200Ah TT	250W/24V or 100W/12Vx2	12V-24V/16A
2000 VA	135Ah-200Ah LA	250W/24V or 100W/12Vx2	12V-24V/16A
2000 VA	135Ah-200Ah TT	250W/24V or 100W/12Vx2	12V-24V/16A

The battery being charged with PV current=16 A current with PV voltage =16 V. Mains not available



### LOAD CHART

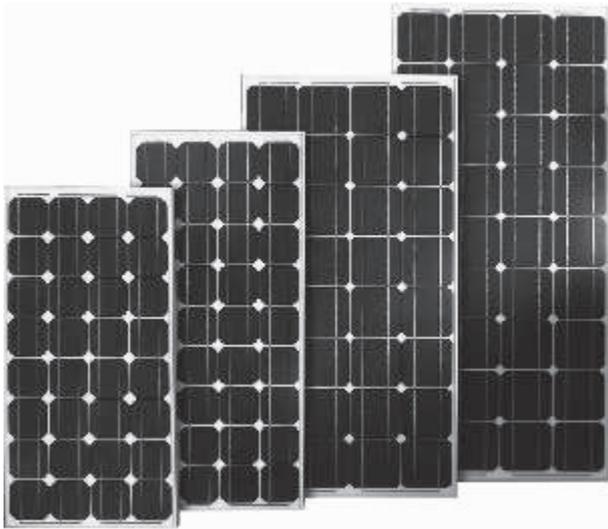
	1400 VA	1500 VA	2000 VA
Printer	-	1	-
TV (19"-21")	1	-	1
Tublight (40W)	6	4	10
Fans (48mm)	6	4	10
CFL (11W)	9	-	16

## POWER ACCESSORIES

### SOLAR CON

#### TECHNICAL SPECIFICATIONS

Nominal Battery Voltage	24 V (Double Battery)
Recommended Home UPS / Inverter Range	Upto 2000VA/12V
Minimum Recommended Battery	100Ah - 200Ah
Maximum PV panel rating	60/72 cell Polycrystalline/monocrystalline
	500 Wp
	Imp: $\leq$ 16A
Float voltage	27.2 V $\pm$ 2% at charger's o/p terminal
Equalization Voltage	Bulk Voltage + 2V
Automatic Temperature compensation in	Provided
Auto Restart after PV High Current	3.5 minutes. $\pm$ 20 sec
Input Range	90V-300V $\pm$ 20V
Automatic Changeover Solar / Grid / Battery	Grid power connects to inverter when battery voltage 80% / 60% / 40% / 20% per battery (As per setting of selection Switch) if grid is within the specified range.
Short Ckt. (Mains Mode)	Yes (through Fuse)
Reverse Battery	Yes with LED indication
Reverse PV array	Yes with LED indication
Surge/ spike protection	Yes through MOV
Backup Mode & Mains Mode	Battery Voltage / Solar Status / Rupees Saving / Mains Low / Mains High / Battery Low / Battery High
Operating Temperature Range	0°C to + 55°C
Dimensions (WxDxH) in mm	215mm X 156mm X 68mm
Weight ( $\pm$ ) 100 gm.	1.3 Kg



Product Code: 10 - INT-SP-OT-00000-00025  
20 - INT-SP-OT-00000-00014  
40 - INT-SP-OT-00000-00026  
50 - INT-SP-OT-00000-00017  
75 - INT-SP-OT-00000-00021  
80 - INT-SP-OT-00000-00065  
100 - INT-SP-OT-00000-00022  
125 - INT-SP-OT-00000-00024  
150 - INT-SP-OT-00000-00029  
250 - INT-SP-OT-00000-00107

Solar panels are devices that convert light into electricity. A solar panel is a collection of small solar cells spread over a large plate. These cells work together to generate power that can be used for different purposes. The more light rays hit a cell, the more electricity is produced, so solar power systems are usually designed with solar panels facing the Sun for capturing optimum energy in order to generate optimum electricity.

The modules are specifically designed to generate optimum energy from sunlight while withstanding the roughest of conditions in a variety of applications (residential/ commercial and industrial)

### Working principle

When light strikes the cell, a certain portion of it is absorbed within the semiconductor material. And, the energy of the absorbed light is transferred to the semiconductor. The energy knocks electrons loose, allowing them to flow freely towards the storage device.

### Applications

• Domestic lighting systems • Street Lighting • Water pumping • Battery charging • Community TV system • Microwave repeater station • Railway signaling and lighting systems • Rural radio phones and exchanges • Offshore platforms • Desalination Plants • Portable lantern • Power pack for village electrification • Crop sprayer • Sign boards & glow signs

### Product Features

- ▶ Monocrystalline / polycrystalline silicon solar cells connected in series.
- ▶ Powered by TEDLAR, crane glass & EVA lamination, Back sheet ensure robustness, rigidity and high performance
- ▶ Solar cells laminated between UV resistant polymer (EVA) and high transmission toughened glass surface.
- ▶ Rugged weather-proof nylon terminal box for output connections.
- ▶ Anodized Aluminum frame for structural support and shock resistance.
- ▶ Trusted & tested for stringent quality standards
- ▶ Lowest Yearly Degradation Rate
- ▶ Government incentives
- ▶ Mechanical Load Test
- ▶ Bypass Diode Thermal Test

### Certifications

- ▶ IEC 61215 standards
- ▶ IEC 61730-1
- ▶ IEC 61730-2
- ▶ IEC 60904-1
- ▶ CE Certified
- ▶ MNRE, Govt of India approved

### Quality and reliability tests

- ▶ Outdoor test for energy yield
- ▶ Electroluminescence
- ▶ IR Thermography
- ▶ Reliability test for junction box
- ▶ Damp heat test
- ▶ Thermal cycling humidity freeze
- ▶ Hot spot test
- ▶ Low Irradiance test
- ▶ STC & NOCT performance
- ▶ UV
- ▶ Outdoor exposure
- ▶ Dry Hipot
- ▶ Insulation Resistance
- ▶ Wet Leakage Current
- ▶ Bypass Diode Thermal Test

## POWER ACCESSORIES

### SOLAR PANEL

#### TECHNICAL SPECIFICATIONS

Max. Power Pmp (W)	10W	20W	40W	50W	75W	80W	100W	125W	150W	250W
Power Tolerance (+/-)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Max. Power Voltage Vmp (V)	16.85	16.95	17.15	17.25	16.92	17	18	18.15	18.25	30.72
Max. Power Current Imp (A)	0.59	1.18	2.33	2.9	4.43	4.71	5.56	6.89	8.22	8.14
Open Circuit Voltage Voc (V)	20.9	21	21.2	21.3	21.82	22.18	22.3	22.4	22.5	37.8
Short Circuit Current Isc (A)	0.65	1.29	2.55	3.17	4.92	5.11	6.1	7.4	8.85	8.63
Max. System Voltage VDC	600	600	600	600	600	600	1000/600	1000/600	1000/600	1000
Pm Temperature Coefficient (%/K)	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.43
Isc Temperature Coefficient (mA/K)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	0.04
Voc Temperature Coefficient (mV/K)	-2	-2	-2	-2	-2	-2	-2	-2	-2	-0.32
NOCT-Nominal operating cell temp. (Celsius)	45	45	45	45	45	45	45	45	45	45

#### Note :

The above specifications pertain to the standard branded SPV Module. It can also supply SPV Modules of different ratings to meet specific technical requirements.

Electrical specifications mentioned above are at standard test conditions as follows [a] light spectrum of AM 1.5 [b] an irradiation of 1,000 Watts per square meter and [c] a cell temperature of 25 degrees Centigrade. Normal production tolerance of +/- 5%

Due to continuous process innovations, the modules supplied may differ from those specified above.

## POWER ACCESSORIES

### TROLLEYS

Su-Kam Trolleys are developed to conveniently and neatly store batteries for their products. They are extremely durable, being made of tough, long lasting material that is not affected by battery leakages or spills. They provide safety to the user by facilitating good ventilation to the batteries and also prevent battery fumes from spreading. They can be moved with ease, thanks to their smooth functioning wheels. Their space-on-space storage system ensures that they stock up neatly. We make sure that whatever you do, it's a smooth ride for you!

#### Matching Trolley

- ▶ **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- ▶ **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- ▶ **X-tra ease of movement:** Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.
- ▶ **X-tra space saving:** Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match
- ▶ **X-tra safe:** Provides good ventilation for battery.



**COSMIC TROLLEY**

TRL-CO-ST-00000-00000



**BRAINY TROLLEY**

TRL-BR-ST-00000-00000



**SMILEY TROLLEY**

TRL-SM-ST-00000-00000



**CHETAK TROLLEY**

TRL-ST-00-00000-00000



**BIG TUBULAR TROLLEY**

TRL-OT-TU-00000-00000



**KNIGHT TROLLEY**

TRL-DT-00-00000-00000



**SONIK TROLLEY**



**PUSHPAK TROLLEY**

TRL-PK-SL-00000-00000



**STACKABLE TROLLEY**