Welcome to the World of Su-Kam High Capacity Power Backup Systems

Su-Kam

Ek nayi soch

PRODUCT CATALOGUE 2013-14

(COMMERCIAL UPS/HIGH CAPACITY INVERTER/ONLINE UPS)

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=41iLbC0mGrE

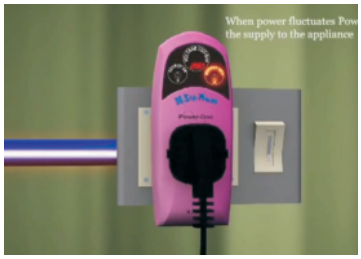
Fusion Commercial Ups
http://www.youtube.com/watch?v=fYzeAC_SaO0

How Does Solar Energy Work
http://www.youtube.com/watch?v=jOn5GkpbtEM

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



Power Guard
http://www.youtube.com/watch?v=pbz602ylhg8

Multiplexer MEGA V2
http://www.youtube.com/watch?v=tP9v3wGVRj8

Multiplexter Power+
http://www.youtube.com/watch?v=tm-OaGizAw4

Su-Kam - New Product Launch
http://www.youtube.com/watch?v=IIxDpcNUIuI

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=MGBomAI_XeM

Su-Kam Sports Week 2012
http://www.youtube.com/watch?v=MxJJmV9sw5c

Employee Award Ceremony Highlights
http://www.youtube.com/watch?v=fujno174Zj8

Su-Kam
Ek nayi soch

Su-Kam Power Systems Ltd.
Corporate Office: Plot No. 54, Udyog Vihar, Phase VI, Sector-37, Gurgaon -122001, Haryana, India
Tel: +91-124-4170500, Fax: +91-124-4038700/1/2 E-mail:info@su-kam.com www.su-kam.com
Toll Free No.: 1800-102-7555

POWER BACK-UP SYSTEMS AND SOLUTIONS

01/14/MASTERCAT-HICAP/C03/GO

index

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, conveyorised 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.


ORIGINAL

No. 3901

GOVERNMENT OF INDIA

THE PATENT OFFICE

DESIGN OFFICE

CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 192244

Date 30 MAY 2002

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 13-01 in respect of the application of such design to "DIGITAL INVERTER"

in the name of SU-KAM COMMUNICATION SYSTEMS LTD., WZ-1402/2, NANGAL RAYA, 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.

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 & COMPANY,
PLOT-18 & 19 "MOHALIA",
17, CAMAC ST., KOL - 700017.

Date of issue
28TH OCTOBER 2002

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!

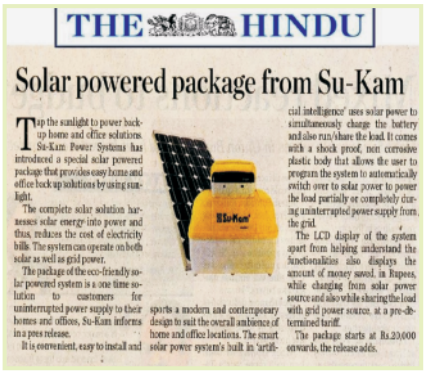
Numerous other leading publications like The Times of India, Hindustan Times, The Hindu, Indian Express, Business India, Business Today, Zee Business, CNBC, ET Now, Times Now, NewsX to name a few have been covering Su-Kam's story for years now.

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.

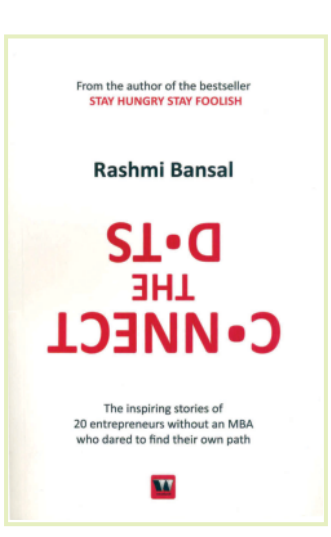

Su-Kam
Ek nayi soch
Selection of Chic Inverters as one of Top 10 Innovations by 'India Today' comes in same category as Tata Nano, Reva.
PLASTIC BODY INVERTER, 2002
Designed by Su-kam, it uses advanced plastics to withstand high temperatures and yet gives a user-friendly finish
INDIA TODAY
MASTERMINDS INDIA
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. : 1800-102-4423 (Toll Free) | www.su-kam.com | sms: 'SUKAM' to 57007


INDIA TODAY
INNOVATORS
KUNWER SACHDEV
THE POWER ECONOMY
success MANTRA
biggest OBSTACLE
unsuccessful STINTS

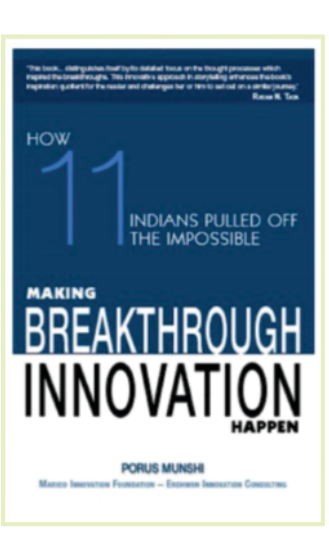

दैनिक भास्कर
पंजाब
सु-कैम ने लगाया सोलर पावर प्लांट
सेवा एनर्जी
तिवालिक पब्लिक स्कूल में प्रतिवर्ष पैदा करेगा 60 से 72 हजार यूनिट बिजली
घरे पंजाब में लगाने पर विचार


THE HINDU
Solar powered package from Su-Kam


Business Line
Su-Kam offers
7-year guarantee
Our Chennai Bureau


From the author of the bestseller
STAY HUNGRY STAY FOOLISH
Rashmi Bansal
CONNECT THE DOTS
The inspiring stories of 20 entrepreneurs without an MBA who dared to find their own path


Business India
THE MAGAZINE OF THE CORPORATE WORLD
April 2013
A chance encounter


HOW 11 INDIANS PULLED OFF THE IMPOSSIBLE
MAKING BREAKTHROUGH INNOVATION HAPPEN
PORUS MUNSHI


THE TIMES OF INDIA
10th December 2008
SPIRIT OF ENTREPRENEURSHIP
Inverting Power Cuts
Nobody has created systems for India. If we give solutions that work, people will buy

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

powerbrands™
innovation in health, beauty and hospitality.

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...

SINE WAVE COMMERCIAL UPS

2.2 kVA - 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 Commercial UPS

FUSION SERIES

Smart Graphics Alerts

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

	FUSION 2.2 kVA/36V				FUSION 3.2 kVA/36V			
Load Options	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**
VOLTAGE RANGE NW-UPS MODE			
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		
VOLTAGE RANGE WW-UPS MODE			
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		
OUTPUT PARAMETER			
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)		
BATTERY CHARGING			
FLC based SMPS charger with Automatic Power Factor Correction			
	SMF	**TUBULAR**	**LEAD ACID**
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

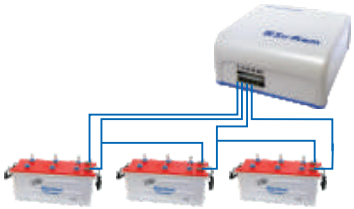
POWER ACCESSORIES

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

SU-KAM WELCOMES YOU	BATTERY : ____V	SELF TEST IN PROGRESS ...
DSP SINE WAVE COMMERCIAL UPS	DSP TEST O.K.	SELF TEST PASS
SYSTEM CAPACITY 2.5KVA-48V DC	H/W REV.:1.2 01 S/W REV.:12.07.7	

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.

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.
- Display 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

	2.5 kVA/48V				3.5 kVA/48V			
Load Options	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**
INPUT Parameters		
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	
UPS Mode		
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	
OUTPUT PARAMETERS (UPS Mode)		
Max. Output Voltage	220V±10V	
Output Freq.	50Hz ±0.3Hz	
Output Freq in Mains mode	Same as Input	
Change Over Time	< 10mSec.	
BATTERY PARAMETERS :		
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)	
TECHNOLOGY		
DSP based state of the art technology using MOSFETs.		
DSP controlled Fuzzy logic battery charger for optimum charging & enhanced battery life.		
Dimensions (DxWxH)	**395 x 245 x 355**	
Weight (Kg)	**25.1**	**30.5**

Note: Specifications are subject to change without any prior Notice

POWER ACCESSORIES

Matching Trolley

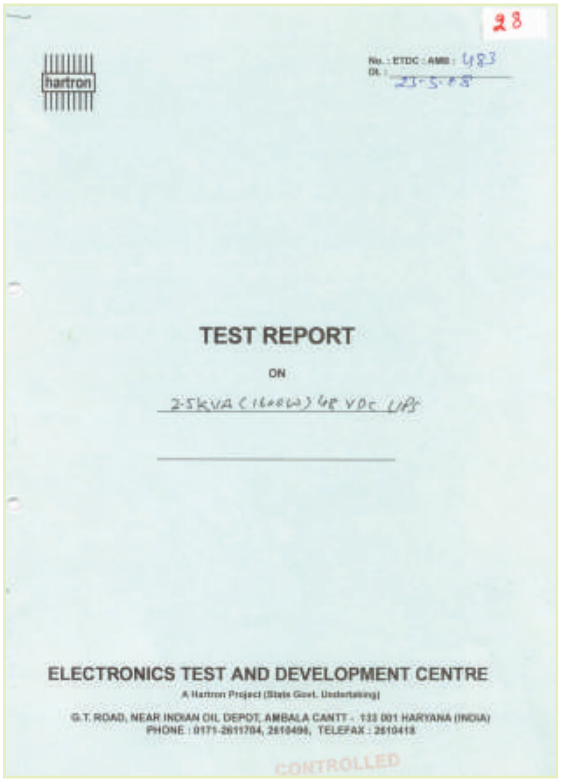
- **X-tra durable:** Made from tough, long lasting PPCP compound material which does not get destroyed ever if there is leakage / spillage from batteries.
- **X-tra convenient:** In built ribs for smooth in and out movement of battery without getting stuck.
- **X-tra ease of movement:** Sturdy yet smooth 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.



hartron

TEST REPORT

ON

2.5KVA (1600W) 48 VDC UPS

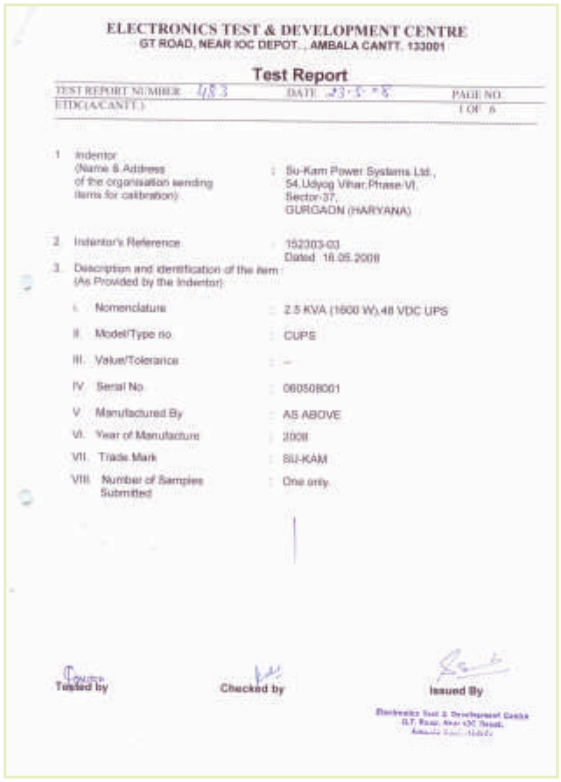
ELECTRONICS TEST AND DEVELOPMENT CENTRE

A Hartron Project (State Govt. Undertaking)

G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)
PHONE : 0171-2611704, 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 483 DATE 23-5-08 PAGE NO.
ETDC(A/CANTT.) 1 OF 6

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)

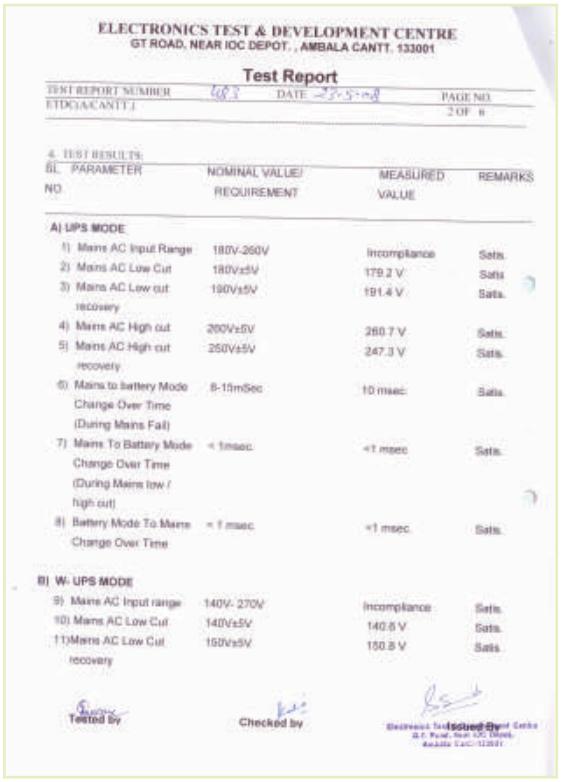
2 Indentor's Reference : 152303-03 Dated 16.05.2008

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 : 080508001
v. Manufactured By : AS ABOVE
vi. Year of Manufacture : 2008
vii. Trade Mark : SU-KAM
viii. Number of Samples Submitted : One only

Tested by Checked by Issued By

Test Report Certificate - Page 2



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

Test Report

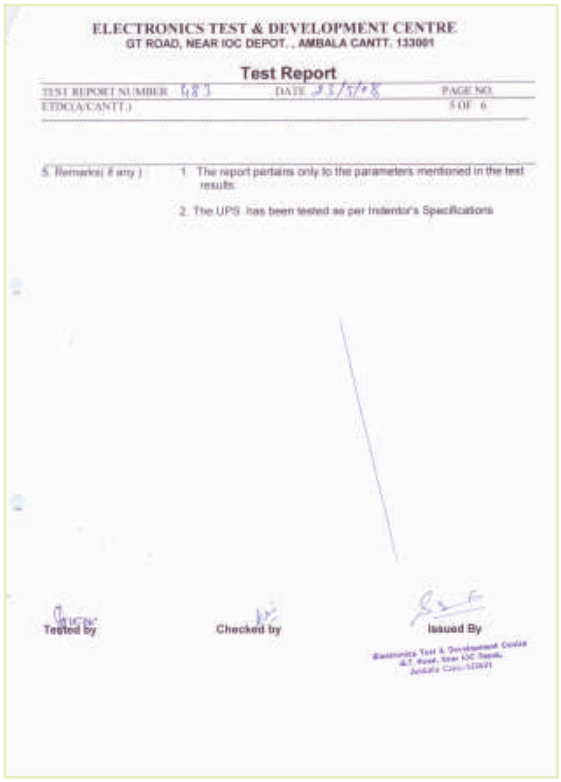
TEST REPORT NUMBER 483 DATE 23-5-08 PAGE NO.
ETDC(A/CANTT.) 2 OF 6

4. TEST RESULTS:

Sl. NO	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
A) UPS MODE				
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) W- UPS MODE				
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 Checked by Issued By

Test Report Certificate - Page 3



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

Test Report

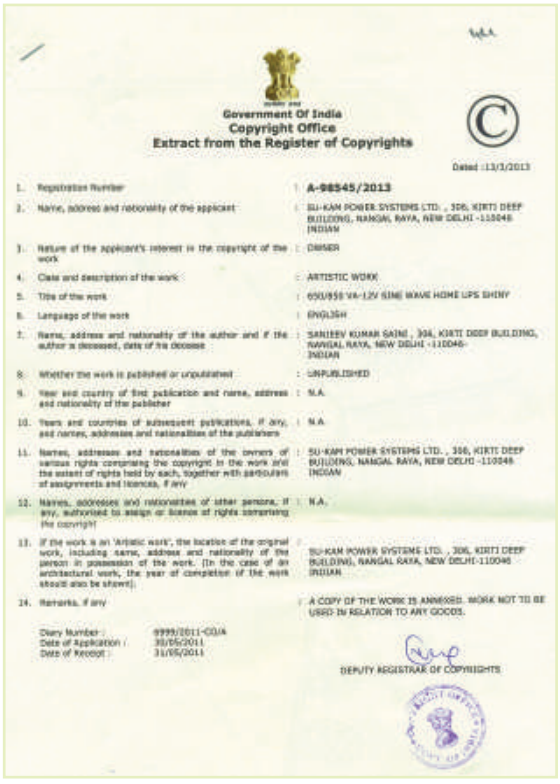
TEST REPORT NUMBER 483 DATE 23/5/08 PAGE NO.
ETDC(A/CANTT.) 3 OF 6

5. Remarks(if any) 1. The report pertains only to the parameters mentioned in the test results.

2. The UPS has been tested as per Indentor's Specifications

Tested by Checked by Issued By

Test Report Certificate - Page 4



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated :13/1/2013

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	: 650/850 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	: 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, authorised to assign or licence 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 : 9999/2011-CO/A
Date of Application : 30/05/2011
Date of Receipt : 31/05/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-93545/2013

Duplicate Certificate

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

Trade Mark No. 1634251 Dated 26/12/2007

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-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

Dated at my direction, this 31st day of March 2014

Delhi
Trade Marks Registry

Registrar of Trade Marks

Certificate

ORIGINAL

No. 1018

GOVERNMENT OF INDIA
THE PATENT OFFICE
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 219618
Date 16TH NOV. 2009
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 13-02 in respect of the application of such design to "HOME UPS SYSTEMS" in the name of

SU-KAM POWER SYSTEMS LTD., PLOT NO.WZ-140/2, NANGAL RAYA, NEW DELHI-110 046, 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.

DR. I. BANERJEE,
L. S. DAVAR & CO.
32, RADHA MADHAB DUTTA GARDEN LANE,
KOLKATA-700010.

Date of Issue
12 AUG 2009

Patent - 217398

ORIGINAL

No. 9293

GOVERNMENT OF INDIA
THE PATENT OFFICE
CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 217396
Date 28TH JULY 2009
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 13-01 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-110 046, 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.
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L. S. DAVAR & CO.
32, RADHA MADHAB DUTTA GARDEN LANE,
KOLKATA-700010.

Date of Issue
16TH APRIL 2009

Patent - 217398

DSP SINE WAVE INVERTER

1 Phase In - 1 Phase Out

5KVA/48V to 15KVA/240

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

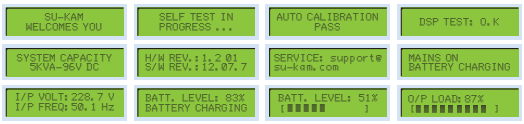
Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)



COLOSSAL SERIES - 5KVA/48V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 5KVA/48V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	10	15	10	2
Fan 48 MM	10	15	10	2
CFL 11W	15	15	20	10
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
165 AH	2 Hr. 30 Mins.	1 Hr.	1 Hr. 20 Mins.	2 Hrs. 30 Mins.
180 AH	2 Hr. 50 Mins.	1 Hrs. 20 Mins.	1 Hr. 40 Mins.	2 Hrs. 40 Mins.

Colossal Series

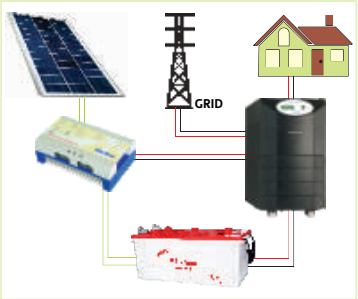
1 Phase In - 1 Phase Out

Technical Specifications

Technology	DSP based PWM technology using IGBT
Ratings	5KVA
INPUT PARAMETERS	
Input Supply	1 Phase, 3 Wire
Voltage Range	140-280VAC ± 10V
Frequency Range	45-55 Hz
Power Factor (charging)	0.85 to 0.90
OUTPUT PARAMETERS	
Voltage Regulation	220V ± 5%
Frequency Regulation	50.0Hz ± 0.1Hz
Peak Efficiency	>87%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	< 3% (For Linear Loads)
Crest Factor	> 3:1
Transient Response	
Overload Handling Capacity	101% for 100 Sec, 160% for 10 sec
BATTERY PARAMETERS	
Cell/Battery Type	12V/150-200Ah
Battery Voltage (Nominal)	48V
Battery Charging Current	6A - 20A ± 1AMP. (Expandable up to 30AMP)
ENVIRONMENTAL PARAMETERS	
Operating Temperature	< 45°C
Acoustic Noise (at 1mts)	< 50dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indications & Alarm	Backlit 16 x 2 Lines LCD Screen with Indications, Alarms & Remedy
Protection Class	IP20
Dimensions-WxHxD (in mm)	350x325x580
Weight (in kgs)	50

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 5000Wp. maximum, Battery 12Vx4

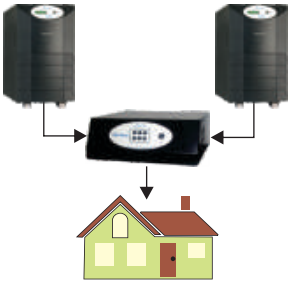
Solar Conversion Kit

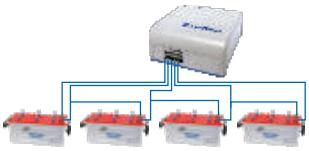
A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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Colossal INVERTER

LCD MESSAGES (1 Phase Products)

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 5KVA-96V DC	H/W REV.:1.2.01 S/W REV.:12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [ ]	O/P LOAD: 87% [ ]

COLOSSAL SERIES - 5KVA/96V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 5KVA/96V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	10	15	10	2
Fan 48 MM	10	15	10	2
CFL 11W	15	15	20	10
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	4 Hrs. 40 Mins.	2 Hrs. 30 Mins	3 Hrs.	4 Hrs. 50 Mins.
180 AH	6 Hrs. 40 Mins.	3 Hrs. 30 Mins.	4 Hrs. 20 Mins	7 Hrs.

Colossal Series

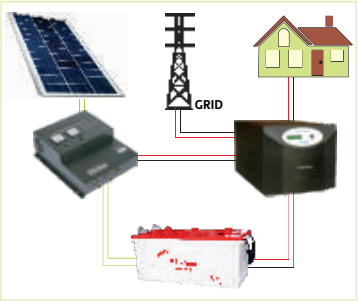
1 Phase In - 1 Phase Out

Technical Specifications

Technology	DSP based PWM technology using IGBT
Ratings	5KVA
INPUT PARAMETERS	
Input Supply	1 Phase, 3 Wire
Voltage Range	140-280VAC ± 10V
Frequency Range	45-55 Hz
Power Factor (charging)	0.85 to 0.90
OUTPUT PARAMETERS	
Voltage Regulation	220V ± 5%
Frequency Regulation	50.0Hz ± 0.1Hz
Peak Efficiency	>87%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	< 3% (For Linear Loads)
Crest Factor	> 3:1
Transient Response	
Overload Handling Capacity	101% for 100 Sec, 160% for 10 sec
BATTERY PARAMETERS	
Cell/Battery Type	12V/100-200Ah
Battery Voltage (Nominal)	96V
Battery Charging Current	6A - 20A ± 1AMP. 6A - 20A ± 1AMP.
ENVIRONMENTAL PARAMETERS	
Operating Temperature	< 45°C
Acoustic Noise (at 1mts)	< 50dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indications & Alarm	Backlit 16 x 2 Lines LCD Screen with Indications, Alarms & Remedy
Protection Class	IP20
Dimensions-WxHxD (in mm)	350x325x580
Weight (in kgs)	50

Specifications are subject to change without prior notice.

POWER ACCESSORIES



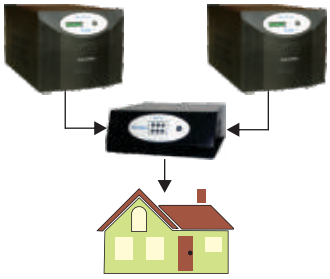
Panel Range: 5000Wp. maximum, Battery 12Vx8

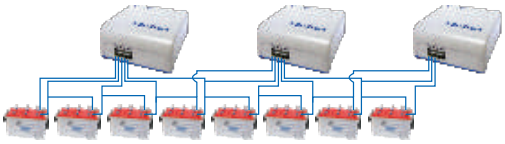
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS ...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 5KVA-96V DC	H/W REV.: 1.2.01 S/W REV.: 12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [ ]	O/P LOAD: 87% [ ]

COLOSSAL SERIES - 5KVA/120V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 5KVA/120V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	10	15	10	2
Fan 48 MM	10	15	10	2
CFL 11W	15	15	20	10
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	6 Hrs. 10 Mins.	3 Hrs. 20 Mins.	4 Hrs.	6 Hrs. 25 Mins.
180 AH	9 Hrs. 10 Mins	4 Hrs. 40 Mins.	5 Hrs. 45 Mins.	9 Hrs. 25 Mins.

Colossal Series

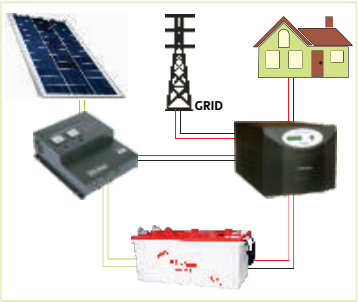
1 Phase In - 1 Phase Out

Technical Specifications

Ratings	5KVA
Voltage Range	140-280VAC ± 10V
Max. Mains to Inverter Change Over Time	<50 mSec
Max. Inverter to Mains Change Over Time	<20 mSec
Charging Current (Settable By Jumper)	7A / 10A / 15A / 20A (± 2A)
Waveform in Inverter Mode	SINE WAVE
Max. Output at Inverter Mode	220V ± 10V
Output Frequency in Inverter Mode	50.0Hz ± 0.5Hz
Full Load	4000W (+ 150W) Resistive Load OR (18.1A + 1.0A)
Over Load Protection with (102%-200% Load)	5 MINUTES TO 15SEC ±10%
Short Circuit Protection	>300% LOAD
Short Circuit Current Peak	400A ±15% FOR 8 Msec. ±2Msec.
Recommended Battery Voltage / Capacity	120V / 100Ah-200Ah
Battery Charger Boost Voltage (In case of tubular Battery)	144.0V ± 1V
Battery Charger Boost Voltage (In case of SMF/LA Battery)	142.0V ± 1V
Max. Battery Charger Float Voltage	137.0V ± 1V
Battery Low Cut Warning	112.5V ± 1V for Export / 108.0V ± 1V for Domestic
Battery Low Cut Point	110V ± 1V for Export / 105.0V ± 1V for Domestic
Efficiency in Inverter Mode (at 100% Resistive Load)	> 85%
Mains Input Power Factor in Charging Mode	0.78 to 0.95
Total Harmonic Distortion (at 100% Linear Load)	< 5%
Dimension W X D X H (mm)	350mm x 625mm x 325mm
Weight without Packing (Kg)	49Kg.
Noise Level	<50dB
Operating Temperature	0°C to 45°C
Display	16 X 2 LINES LCD
Communication	Optional

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 5000Wp. maximum, Battery 12Vx10

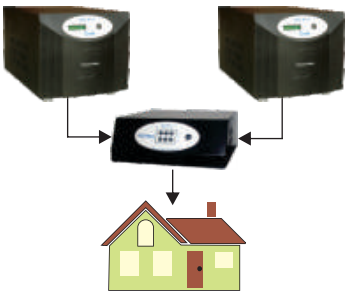
Solar Conversion Kit

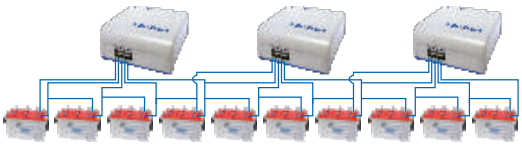
A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





Battery Equalizer

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Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 5KVA-96V DC	H/W REV.:1.2.01 S/W REV.:12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [ ]	O/P LOAD: 87% [ ]

COLOSSAL SERIES - 7.5KVA/120V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 7.5KVA/120V				
Load Options	A	B	C	D
TV 19-21"	-	6	4	2
Room Cooler	-	-	2	2
Tube Light 40W	25	20	15	10
Fan 48 MM	25	20	15	10
CFL 11W	40	20	15	20
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	2 Hr.	2 Hrs. 10 Mins.	2 Hrs. 40 Mins.	2 Hrs. 35 Mis.
180 AH	2 Hrs. 55 Mins.	3 Hrs. 10 Mins.	3 Hrs. 55 Mins.	3 Hrs. 35 Mins.

Colossal Series

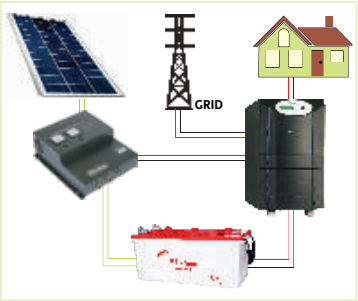
1 Phase In - 1 Phase Out

Technical Specifications

Technology	DSP based PWM technology using IGBT
Ratings	7.5KVA
INPUT PARAMETERS	
Input Supply	1 Phase, 3 Wire
Voltage Range	140-280VAC ± 10V
Frequency Range	45-55 Hz
Power Factor (charging)	0.85 to 0.90
OUTPUT PARAMETERS	
Voltage Regulation	220V ± 5%
Frequency Regulation	50.0Hz ± 0.1Hz
Peak Efficiency	>87%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	< 3% (For Linear Loads)
Crest Factor	> 3:1
Transient Response	
Overload Handling Capacity	101% for 100 Sec, 160% for 10 sec
BATTERY PARAMETERS	
Cell/Battery Type	12V/100-200Ah
Battery Voltage (Nominal)	120V
Battery Charging Current	6A - 20A ± 1AMP (Expandable up to 30AMP)
ENVIRONMENTAL PARAMETERS	
Operating Temperature	< 45°C
Acoustic Noise (at 1mts)	< 50dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indications & Alarm	Backlit 16 x 2 Lines LCD Screen with Indications, Alarms & Remedy
Protection Class	IP20
Dimensions-WxHxD (in mm)	350x615x525
Weight (in kgs)	77

Specifications are subject to change without prior notice.

POWER ACCESSORIES



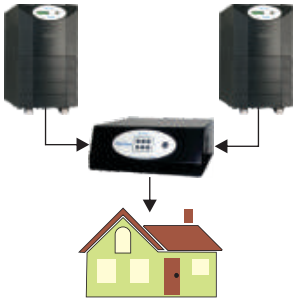
Panel Range: 7500Wp. maximum, Battery 12Vx10

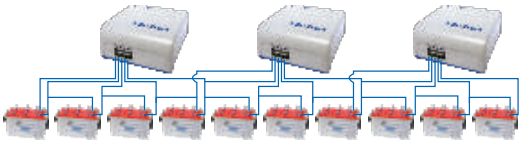
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





Battery Equalizer

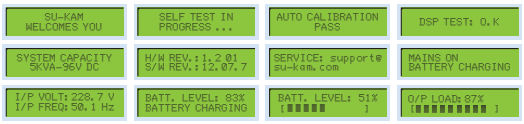
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)



COLOSSAL SERIES - 10KVA/180V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 10KVA/180V				
Load Options	A	B	C	D
TV 19-21"	-	7	2	2
Room Cooler	-	-	4	4
Tube Light 40W	40	25	20	15
Fan 48 MM	40	25	20	15
CFL 11W	40	25	20	10
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	1 Hr. 55 Mins.	2 Hrs. 55 Mins.	3 Hrs. 20 Mins.	2 Hrs. 15 Mins.
180 AH	2 Hrs. 50 Mins.	4 Hrs.	4 Hrs. 40 Mins.	3 Hrs. 25 Mins.

Colossal Series

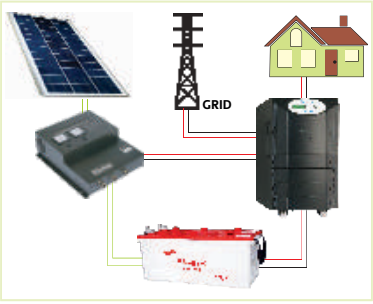
1 Phase In - 1 Phase Out

Technical Specifications

Technology	DSP based PWM technology using IGBT
Ratings	10KVA
INPUT PARAMETERS	
Input Supply	1 Phase, 3 Wire
Voltage Range	140-280VAC ± 10V
Frequency Range	45-55 Hz
Power Factor (charging)	0.85 to 0.90
OUTPUT PARAMETERS	
Voltage Regulation	220V ± 5%
Frequency Regulation	50.0Hz ± 0.1Hz
Peak Efficiency	>90%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	< 3% (For Linear Loads)
Crest Factor	> 3:1
Transient Response	
Overload Handling Capacity	101% for 100 Sec, 160% for 10 sec
BATTERY PARAMETERS	
Cell/Battery Type	12V/100-200Ah
Battery Voltage (Nominal)	180V
Battery Charging Current	6A - 20A ± 1AMP (Expandable up to 30AMP)
ENVIRONMENTAL PARAMETERS	
Operating Temperature	< 45°C
Acoustic Noise (at 1mts)	< 50dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indications & Alarm	Backlit 16 x 2 Lines LCD Screen with Indications, Alarms & Remedy
Protection Class	IP20
Dimensions-WxHxD (in mm)	350x615x525
Weight (in kgs)	98

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 10000Wp. maximum, Battery 12Vx15

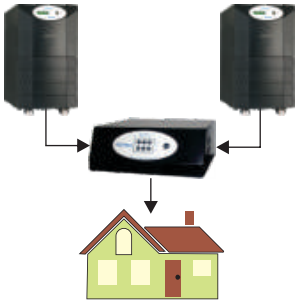
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



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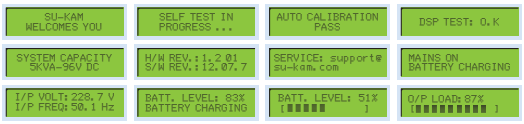
Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)



COLOSSAL SERIES - 10KVA/240V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 10KVA/240V				
Load Options	A	B	C	D
TV 19-21"	-	7	2	2
Room Cooler	-	-	4	4
Tube Light 40W	40	25	20	15
Fan 48 MM	40	25	20	15
CFL 11W	40	25	20	10
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	2 Hrs. 45 Mins	4 Hrs.	4 Hrs. 40 Mins.	3 Hrs. 25 Min.s
180 AH	4 Hrs.	5 Hrs. 45 Mins.	6 Hrs. 40 Mins.	4 Hrs. 45 Mins.

Colossal Series

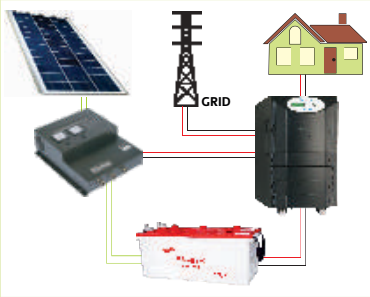
1 Phase In - 1 Phase Out

Technical Specifications

Ratings	10KVA
Voltage Range	140-280VAC ± 10V
Max. Mains to Inverter Change Over Time	<50 mSec
Max. Inverter to Mains Change Over Time	<20 mSec
Charging Current (Settable By Jumper)	7A / 10A / 15A / 20A (± 2A)
Waveform in Inverter Mode	SINE WAVE
Max. Output at Inverter Mode	220V ± 10V
Output Frequency in Inverter Mode	50.0Hz ± 0.5Hz
Full Load	8000W (+ 150W) Resistive Load OR (36.4 A +1A)
Over Load Protection with (102%-200% Load)	5 MINUTES TO 15 Sec. ±10%
Short Circuit Protection	>300% LOAD
Short Circuit Current Peak	400A ±15% FOR 8 Msec. ±2Msec.
Recommended Battery Voltage / Capacity	180V / 100Ah-200Ah
Battery Charger Boost Voltage (In case of tubular Battery)	288.0V ± 2V
Battery Charger Boost Voltage (In case of SMF/LA Battery)	284V ± 2V
Max. Battery Charger Float Voltage	274V ± 2V
Battery Low Cut Warning	224V ± 2V for Export / 216V ± 1V for Domestic
Battery Low Cut Point	220V ± 2V for Export / 210V ± 1V for Domestic
Efficiency in Inverter Mode (at 100% Resistive Load)	> 88%
Mains Input Power Factor in Charging Mode	0.78 to 0.95
Total Harmonic Distortion (at 100% Linear Load)	< 5%
Noise Level	<50dB
Operating Temperature	0°C to 45°C
Display	16 X 2 LINES LCD
Communication	Optional

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 10000Wp. maximum, Battery 12Vx20

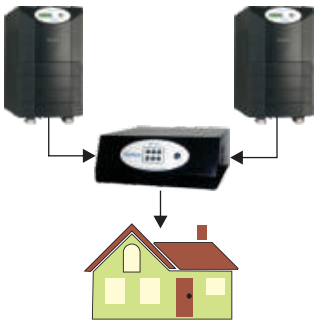
Solar Conversion Kit

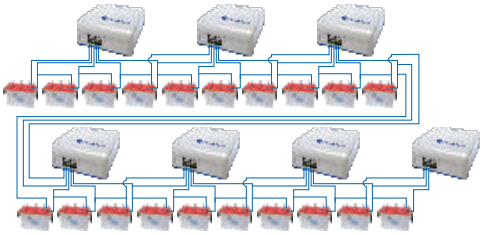
A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





Battery Equalizer

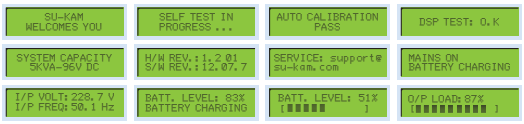
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Colossal Series

1 Phase In - 1 Phase Out

Colossal INVERTER

LCD MESSAGES (1 Phase Products)



COLOSSAL SERIES - 15KVA/240V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty usage
- Less Switch-over time
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advance Battery Care System
- Su-Kam's Soft Start Technology
- Cold Start
- Generator compatible
- Solar Compatible
- In-built TDR for compressor based application e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 15KVA/240V				
Load Options	A	B	C	D
TV 19-21"	-	10	4	2
Room Cooler	-	-	6	4
Tube Light 40W	50	40	30	20
Fan 48 MM	50	40	30	20
CFL 11W	50	40	30	15
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	2 Hrs. 10 Mins.	2 Hrs. 20 Mins.	2 Hrs. 40 Mins.	2 Hrs. 55 Mins.
180 AH	3 Hrs.	3 Hrs. 20 Mins.	3 Hrs. 55 Mins.	4 Hrs.

Colossal Series

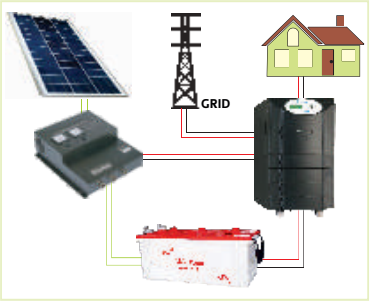
1 Phase In - 1 Phase Out

Technical Specifications

Ratings	15KVA
Voltage Range	140-280VAC ± 10V
Max. Mains to Inverter Change Over Time	<50 mSec
Max. Inverter to Mains Change Over Time	<20 mSec
Charging Current (Settable By Jumper)	7A / 10A / 15A / 20A (± 2A)
Waveform in Inverter Mode	SINE WAVE
Max. Output at Inverter Mode	220V ± 10V
Output Frequency in Inverter Mode	50.0Hz ± 0.5Hz
Full Load	12000W (± 250W) Resistive Load OR ((52.1 A ±1A)
Over Load Protection with (102%-200% Load)	5 MINUTES TO 15 Sec. ±10%
Short Circuit Protection	>300% LOAD
Short Circuit Current Peak	400A ±15% FOR 8 Msec. ±2Msec.
Recommended Battery Voltage / Capacity	180V / 100Ah-200Ah
Battery Charger Boost Voltage (In case of tubular Battery)	288.0V ± 2V
Battery Charger Boost Voltage (In case of SMF/LA Battery)	284V ± 2V
Max. Battery Charger Float Voltage	274V ± 2V
Battery Low Cut Warning	224V ± 2V for Export / 216V ± 1V for Domestic
Battery Low Cut Point	220V ± 2V for Export / 210V ± 1V for Domestic
Efficiency in Inverter Mode (at 100% Resistive Load)	> 88%
Mains Input Power Factor in Charging Mode	0.78 to 0.95
Total Harmonic Distortion (at 100% Linear Load)	< 5%
Noise Level	<50dB
Operating Temperature	0°C to 45°C
Display	16 X 2 LINES LCD
Communication	Optional

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 15000Wp. maximum, Battery 12Vx20

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A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

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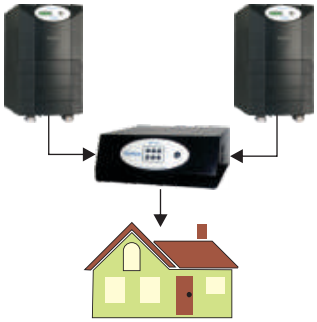
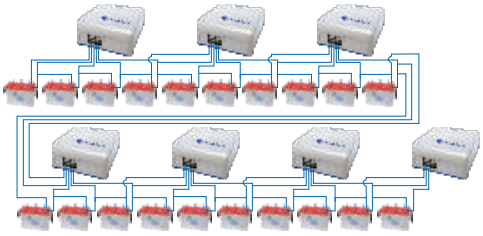
Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

DET NORSKE VERITAS

CERTIFICATE OF CONFORMITY

CERTIFICATE No. DNV-2005-OSL-LVD/EMC-0242
This Certificate consists of 3 pages

This is to confirm that the following equipment
ONLINE UPS
OFFLINE UPS
INVERTER

with type designations
(see overleaf)

manufactured by
SU-KAM POWER SYSTEMS LTD.,
196-C, UDYOG VIHAR, SECTOR-37, PHASE VI, GURGAON-122001 HARYANA , INDIA

are found to comply with
The essential health and safety requirements specified in Annex I of Council Directive 73/23/EEC, as amended and the essential protection requirements specified in Article 4 of Council Directive 89/336/EEC, as amended.

The products have been assessed with respect to the technical documentation as specified in point 3 of Annex IV of 73/23/EEC and to suitable standards referred to in Article 7(1)(a) of 89/336/EEC

Further details of the products and conditions for certification are given overleaf.

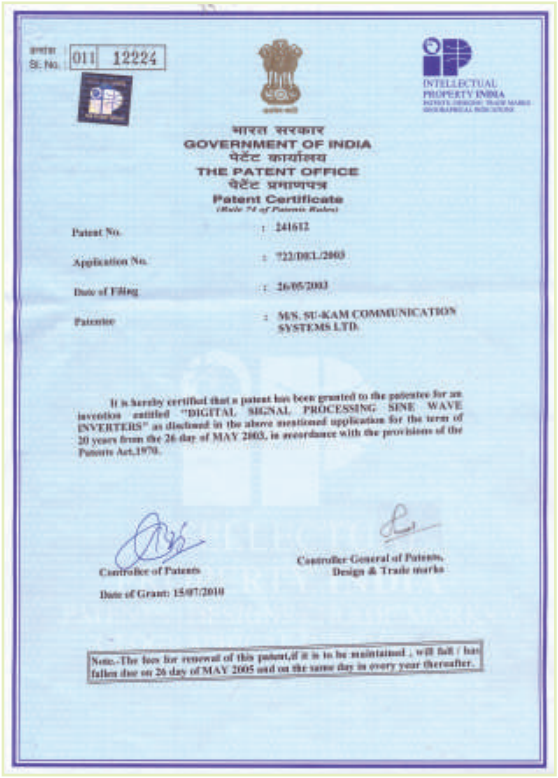
Place and date
Høvik, 28th June 2005
for DET NORSKE VERITAS CERTIFICATION AS

CE

Lise Gangeflar
Head of Section

Per Gulbrandsen / Huu Dung Dinh

CE Certificate



भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
पेटेंट प्रमाणपत्र
Patent Certificate

Patent No. : 241612

Application No. : 722/DEL/2003

Date of Filing : 26/05/2003

Patentee : M/S. SU-KAM COMMUNICATION SYSTEMS LTD.

It is hereby certified that a patent has been granted to the patentee for an invention entitled "DIGITAL SIGNAL PROCESSING SINE WAVE INVERTERS" as disclosed in the above mentioned application for the term of 20 years from the 26 day of MAY 2003, in accordance with the provisions of the Patents Act,1970.

Controller of Patents

Controller General of Patents, Design & Trade marks

Date of Grant: 15/07/2010

Note.-The fees for renewal of this patent,if it is to be maintained , will fall / has fallen due on 26 day of MAY 2005 and on the same day in every year thereafter.

Technology Patent

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 15/3/2013

1.	Registration Number	L-47614/2013
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	LITRARY/ DRAMATIC WORK
5.	Title of the work	POWER DOC WEB -BASED REMOTE MONITORING APPLICATION
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 5402/2011-CO/L
Date of Application : 25/04/2011
Date of Receipt : 27/04/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 12/2/2013

1.	Registration Number	L-46485/2013
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	LITRARY/ DRAMATIC WORK
5.	Title of the work	STATIC BY PASS SWITCH (SINGLE/ THREE PHASE)
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 368/2011 CO/L
Date of Application : 14/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 13/08/2012

1. Registration Number : SW-7102/2013
2. Name, address and nationality of the applicant : SU-KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, MANGAL 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 : COMPUTER SOFTWARE WORK
5. Title of the work : STATIC BY PASS SWITCH (SINGLE PHASE)
6. Language of the work : JAVA, PYTHON
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, MANGAL 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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). : N.A.
14. Remarks, if any

Diary Number : 2969/2011-CO/A
Date of Application : 17/08/2011
Date of Receipt : 17/08/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 28/10/2013

1. Registration Number : A-95394/2012
2. Name, address and nationality of the applicant : SU-KAM POWER SYSTEMS LTD., , 306, KIRTI DEEP BUILDING, MANGAL 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 : PCB LAYOUT OF DRIVER CARD
6. Language of the work : OTHERS
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, MANGAL 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any : PCB LAYOUT OF DRIVER CARD

Diary Number : 12137/2013-CO/A
Date of Application : 08/11/2013
Date of Receipt : 08/11/2013

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 28/12/2012

1. Registration Number : A-95395/2012
2. Name, address and nationality of the applicant : SU-KAM POWER SYSTEMS LTD., , 306, KIRTI DEEP BUILDING, MANGAL 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 : PCB LAYOUT OF INVERTER/UPS (7.5KVA CUPS)
6. Language of the work : OTHERS
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, MANGAL 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any

Diary Number : 18938/2012-CO/A
Date of Application : 08/11/2012
Date of Receipt : 08/11/2012

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

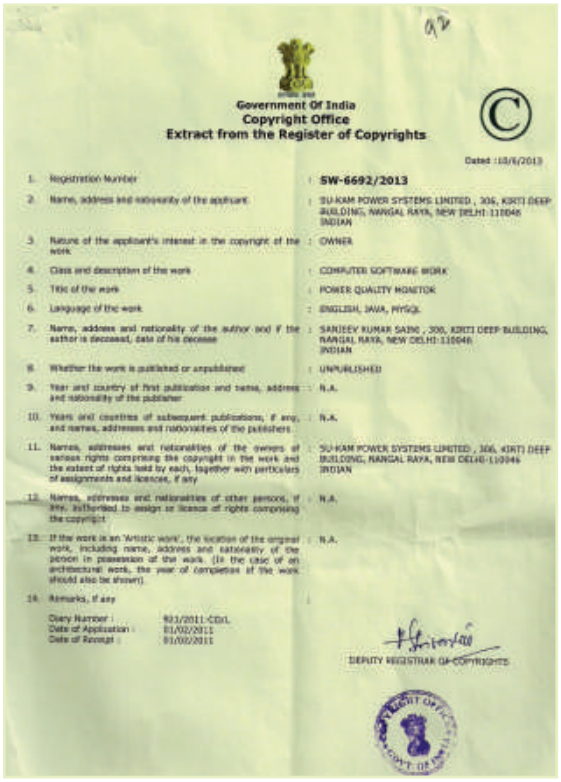
Dated : 1/1/2013

1. Registration Number : A-95478/2013
2. Name, address and nationality of the applicant : SU-KAM POWER SYSTEMS LTD., , 306, KIRTI DEEP BUILDING, MANGAL 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 : 2.5/3.5 KVA-48V COMMERCIAL UPS
6. Language of the work : OTHERS
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, MANGAL 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
12. Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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, MANGAL RAYA, NEW DELHI-110046 INDIAN
14. Remarks, if any : THE ARTISTIC WORK NOT TO BE REPEAT IN RELATION TO ANY SIMILAR

Diary Number : 12137/2013-CO/A
Date of Application : 08/11/2013
Date of Receipt : 08/11/2013

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

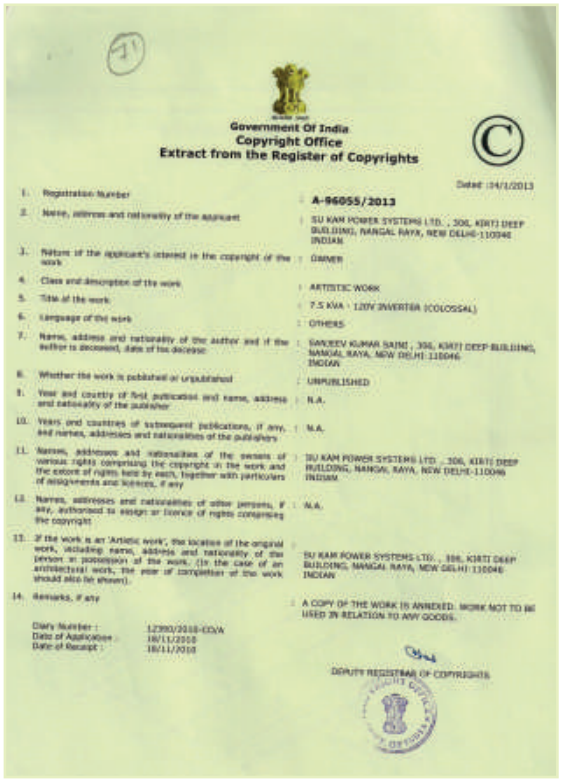
Dated :18/6/2013

1.	Registration Number	: SW-6692/2013
2.	Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LIMITED , 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	: COMPUTER SOFTWARE WORK
5.	Title of the work	: POWER QUALITY MONITOR
6.	Language of the work	: ENGLISH, JAVA, MYSQL
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 LIMITED , 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI-110046 INDIAN
12.	Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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).	: N.A.
14.	Remarks, if any	

Diary Number : 931/2011-CO/L
Date of Application : 01/02/2011
Date of Receipt : 01/02/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated :04/1/2013

1.	Registration Number	: A-96055/2013
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	: 7.5 KVA - 120V INVERTER (COLOSSAL)
6.	Language of the work	: OTHERS
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, authorised to assign or licence 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 : 12390/2010-CO/A
Date of Application : 18/11/2010
Date of Receipt : 18/11/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate

Government Of India
Copyright Office
Extract from the Register of Copyrights

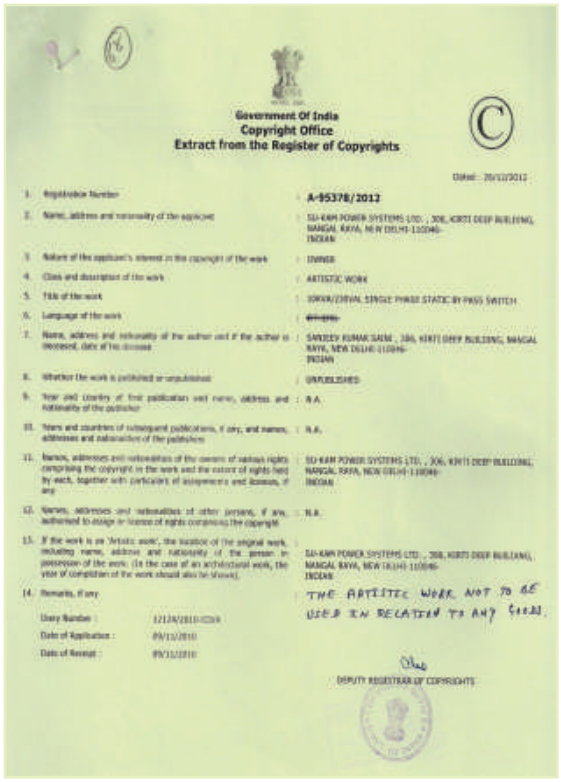
Dated : 31/12/2012

1.	Registration Number	: A-95332/2012
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	: 5KVA-96V INVERTOR (MOSFET BASE)
6.	Language of the work	: OTHERS
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, authorised to assign or licence 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 sealed copy of the work is returned and another sealed copy is kept. Work not to be used in relation to any goods.

Diary Number : 12397/2010-CO/A
Date of Application : 18/11/2010
Date of Receipt : 18/11/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

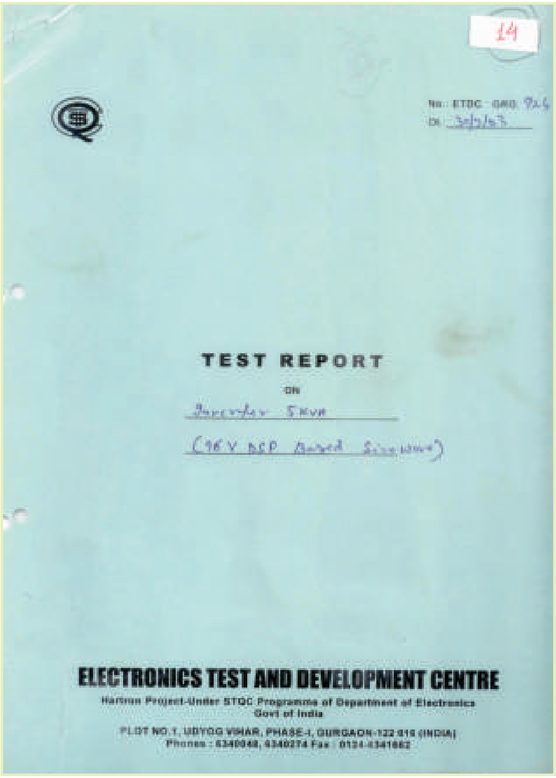
Dated : 20/12/2012

1.	Registration Number	: A-95378/2012
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	: 10KVA/220VAC, SINGLE PHASE STATIC BY-PASS SWITCH
6.	Language of the work	: [illegible]
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, authorised to assign or licence 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	: THE ARTISTIC WORK NOT TO BE USED IN RELATION TO ANY GOODS.

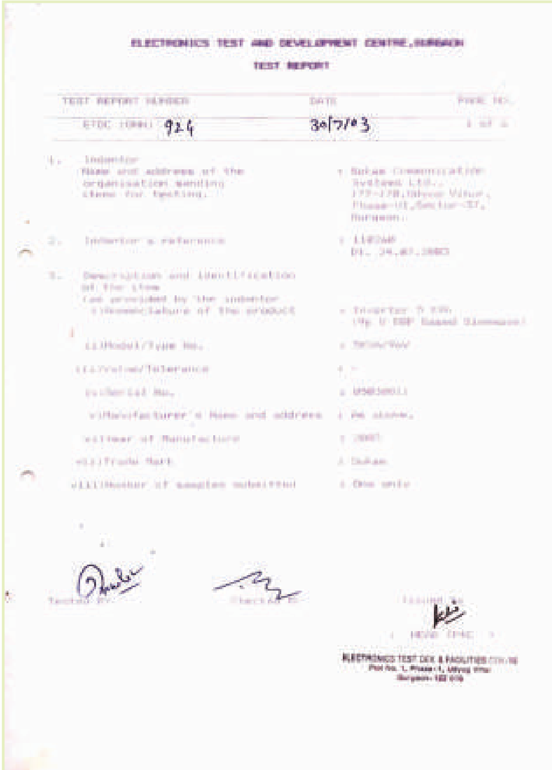
Diary Number : 12129/2010-CO/A
Date of Application : 09/11/2010
Date of Receipt : 09/11/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Test Report Certificate - Page 1


ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GRN) 924	30/7/03	1 of 6

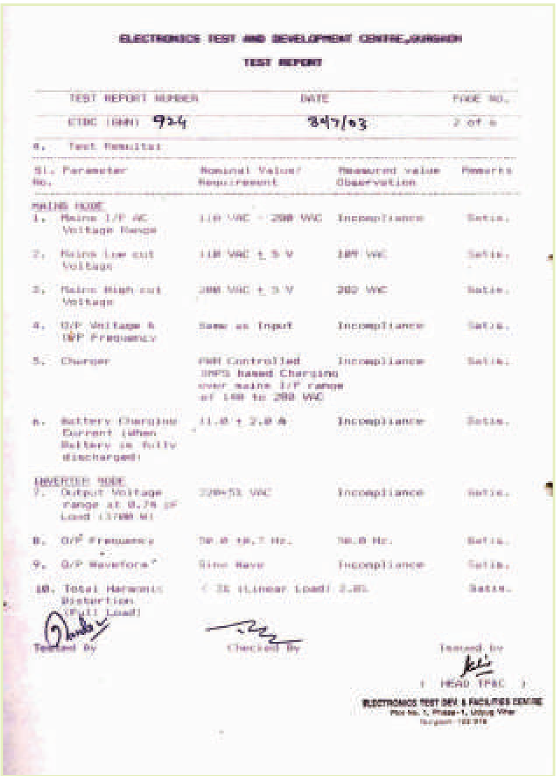
1. Indentor
Name and address of the organisation sending items for testing. : Sukam Communication Systems Ltd., 177-178, Udyog Vihar, Phase-VI, Sector-37, Gurgaon.

2. Indentor's reference : [illegible]

3. Description and identification of the item (as provided by the indentor)
i) Nomenclature of the product : Inverter 5 KVA (96 V DSP Based Sinewave)
ii) Model/Type No. : [illegible]
iii) Value/Tolerance : -
iv) Serial No. : [illegible]
v) Manufacturer's Name and address : As above.
vi) Year of Manufacture : [illegible]
vii) Trade Mark : Sukam
viii) Number of samples submitted : One unit

Tested By Checked By Issued by
(HEAD TP&C)
ELECTRONICS TEST DEV. & FACILITIES CENTRE

Test Report Certificate - Page 2


ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GRN) 924	30/7/03	2 of 6

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured value Observation	Remarks
	MAINS MODE			
1.	Mains I/P AC Voltage Range	110 VAC - 280 VAC	Incompliance	Satis.
2.	Mains Low cut Voltage	110 VAC ± 5 V	109 VAC	Satis.
3.	Mains High cut Voltage	280 VAC ± 5 V	282 VAC	Satis.
4.	O/P Voltage & O/P Frequency	Same as Input	Incompliance	Satis.
5.	Charger	PWM Controlled SMPS based Charging over mains I/P range of 140 to 280 VAC	Incompliance	Satis.
6.	Battery Charging Current (when Battery is fully discharged)	11.0 ± 2.0 A	Incompliance	Satis.
	INVERTER MODE			
7.	Output Voltage range at 0.74 pF Load (3700 W)	220±5% VAC	Incompliance	Satis.
8.	O/P Frequency	50.0 ±0.? Hz.	50.0 Hz.	Satis.
9.	O/P Waveform	Sine Wave	Incompliance	Satis.
10.	Total Harmonic Distortion (Full Load)	< 3% (Linear Load)	2.8%	Satis.

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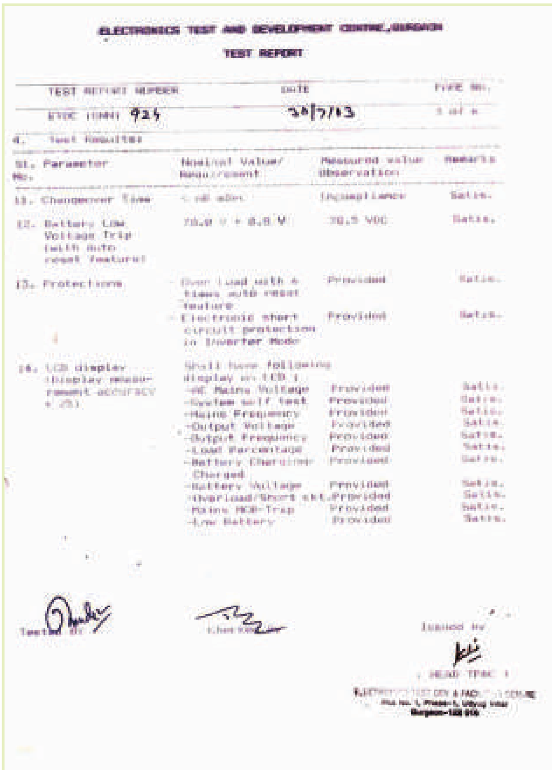
Plot No. 1, Phase-1, Udyog Vihar
Gurgaon-122 016

Test Report Certificate - Page 3


ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

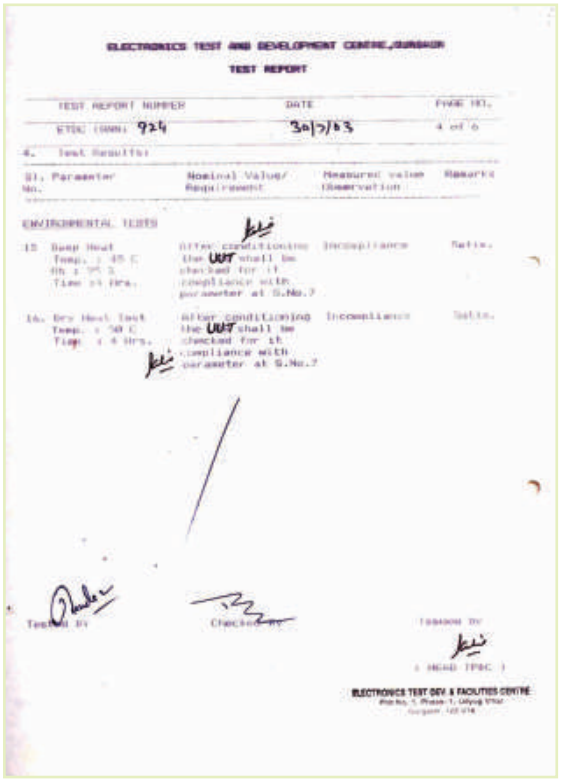
TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GRN) 924	30/7/03	3 of 6

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured value Observation	Remarks
11.	Changeover Time	[illegible]	Incompliance	Satis.
12.	Battery Low Voltage Trip (with auto reset feature)	[illegible]	70.5 VDC	Satis.
13.	Protections	- Over Load with 6 times auto reset feature	Provided	Satis.
		- Electronic short circuit protection in Inverter Mode	Provided	Satis.
14.	LCD display (Display measurement accuracy ± 2%)	Shall have following display on LCD :		
		-AC Mains Voltage	Provided	Satis.
		-System self test	Provided	Satis.
		-Mains Frequency	Provided	Satis.
		-Output Voltage	Provided	Satis.
		-Output Frequency	Provided	Satis.
		-Load Percentage	Provided	Satis.
		-Battery Charging Charged	Provided	Satis.
		-Battery Voltage	Provided	Satis.
		-Overload/Short ckt.	Provided	Satis.
		-Mains MCB-Trip	Provided	Satis.
		-Low Battery	Provided	Satis.

Tested By Checked By Issued by
(HEAD TP&C)
ELECTRONICS TEST DEV. & FACILITIES CENTRE
Plot No. 1, Phase-1, Udyog Vihar
Gurgaon-122 016

Test Report Certificate - Page 4



ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 924	30/7/13	4 of 6

4. Test Results:

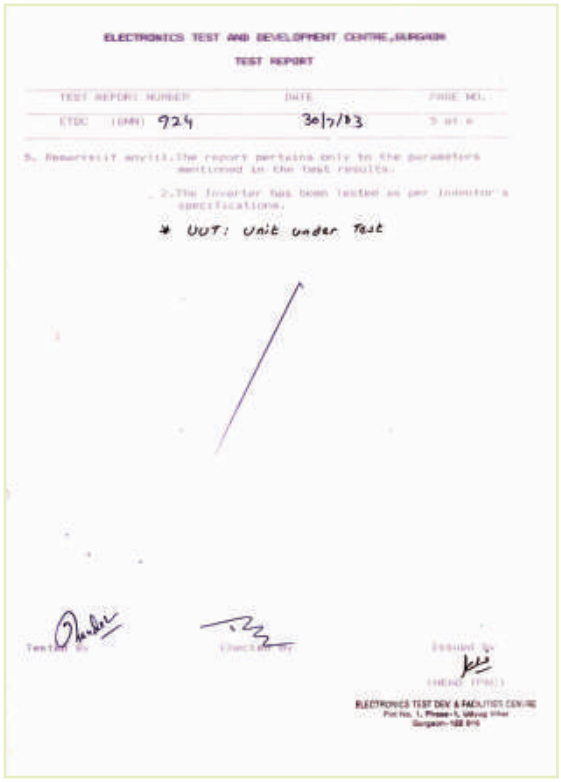
Sl. Parameter No.	Nominal Value/ Requirement	Measured value (Observation	Remarks
ENVIRONMENTAL TESTS			
13 Damp Heat Temp. : 45 C RH : 95 % Time :1 Hrs.	After conditioning the UUT shall be checked for it compliance with parameter at S.No.7	Incompliance	Satis.
14. Dry Heat Test Temp. : 50 C Time : 4 Hrs.	After conditioning the UUT shall be checked for it compliance with parameter at S.No.7	Incompliance	Satis.

Tested By Checked By Issued By

(HEAD (PSC))

ELECTRONICS TEST DEV & FACILITIES CENTRE

Test Report Certificate - Page 5



ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 924	30/7/13	5 of 6

5. Remarks:1.The report pertains only to the parameters mentioned in the test results.

2.The Inverter has been tested as per Inventor's specifications.

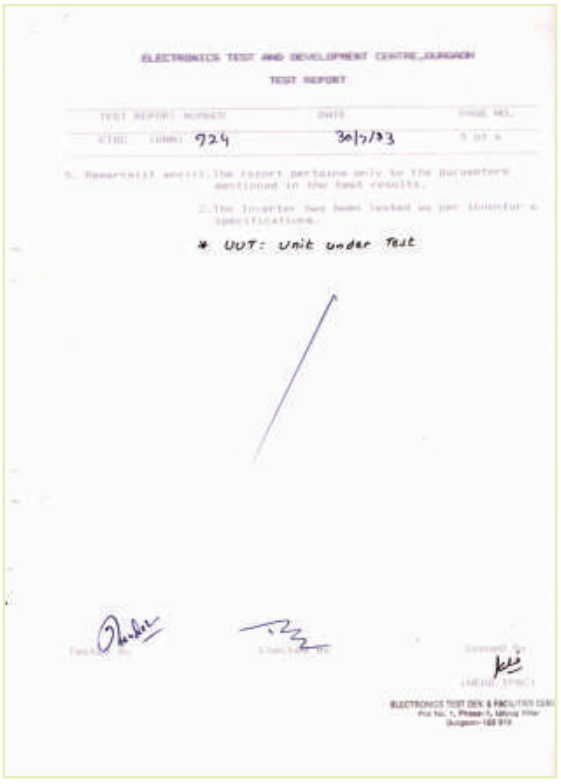
* UUT: Unit under Test

Tested By Checked By Issued By

(HEAD (PSC))

ELECTRONICS TEST DEV & FACILITIES CENTRE

Test Report Certificate - Page 6



ELECTRONICS TEST AND DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 924	30/7/13	5 of 6

5. Remarks:1.The report pertains only to the parameters mentioned in the test results.

2.The Inverter has been tested as per Inventor's specifications.

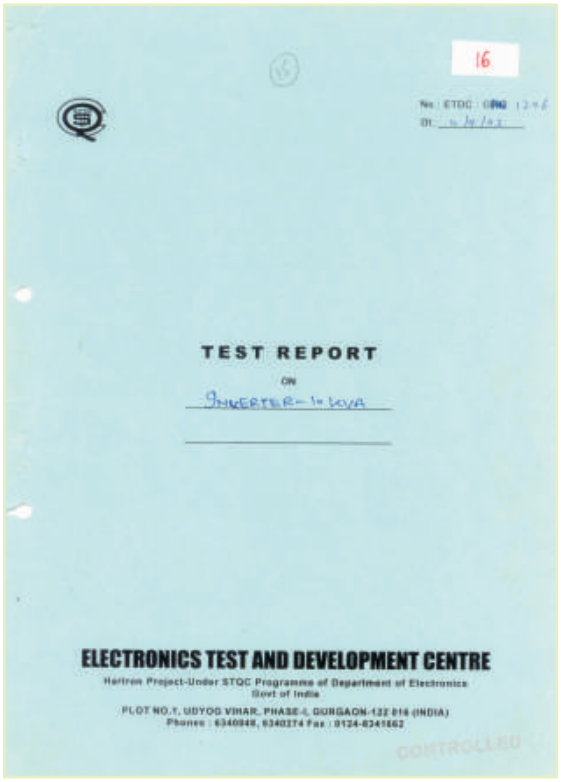
* UUT: Unit under Test

Tested By Checked By Issued By

(HEAD (PSC))

ELECTRONICS TEST DEV & FACILITIES CENTRE

Test Report Certificate - Page 7



16

TEST REPORT

ON

INVERTER-1KVA

ELECTRONICS TEST AND DEVELOPMENT CENTRE

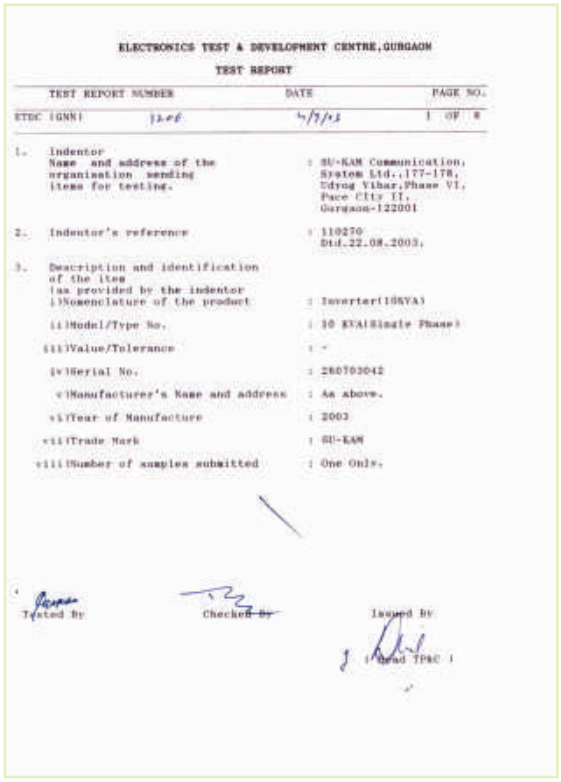
Hartron Project-Under STQC Programme of Department of Electronics Govt of India

PLOT NO.7, UDYOG VIHAR, PHASE-I, GURGAON-122 016 (INDIA)

Phones : 6340848, 6340274 Fax : 0124-6341662

CONTROLLED

Test Report Certificate - Page 1



ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 1206	4/9/03	1 OF 8

1. Indentor
Name and address of the organisation sending items for testing. : SU-KAM Communication System Ltd.,177-178, Udyog Vihar,Phase VI, Pace City II, Gurgaon-122001

2. Indentor's reference : 110270 Dtd.22.08.2003.

3. Description and identification of the item (as provided by the indentor
(i)Nomenclature of the product : Inverter(1KVA)
(ii)Model/Type No. : 10 KVA(Single Phase)
(iii)Value/Tolerance : -
(iv)Serial No. : 280703042
(v)Manufacturer's Name and address : As above.
(vi)Year of Manufacture : 2003
(vii)Trade Mark : SU-KAM
(viii)Number of samples submitted : One Only.

Tested By Checked By Issued By (Head TD&C)

Test Report Certificate - Page 2

ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 1206	4/9/03	2 OF 8

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured Value/ Inspection Results	Remarks
1.	Input Voltage	160V-260VAC,50 Hz. ±3 %,Single Phase	Incompliance	Satis.
2.	Output Voltage (Inverter mode)	230V ± 10%from No-Load to Full-Load	Incompliance	Satis.
3.	Output Frequency (Inverter Mode)	50 Hz.± 0.5 Hz.	Incompliance	Satis.
4.	Output Waveform (Inverter Mode)	Quasi Sine Wave	Sinewave	Satis.
5.	Total Harmonic Distortion	10% (Max.)	2.7%	Satis.
6.	Load Power Factor	0.8 Lagging to Unity	Incompliance	Satis.
7.	Inverter Efficiency	80 % (minimum)	83.8 %	Satis.
8.	Overload	10 % for 10 Min.	Incompliance	Satis.
9.	Protections	Following protections shall be provided:		
		- Over load & short circuit at output	Provided	Satis.
		- Under voltage at battery terminals	Provided	Satis.
		- Over shoot/under shoot shall not be greater than 10 % of rated o/p voltage for duration 50 msec. (Max.)	Incompliance	Satis.

Tested By Checked By Issued By

Test Report Certificate - Page 3

ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNN) 1206	4/9/03	3 OF 8

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured Value/ Inspection Results	Remarks
		- Battery overcharge	Provided	Satis.
		- Battery reverse polarity	Provided	Satis.
10.	Technology	Inverter shall be of PWM Technology	Incompliance	Satis.
11.	Indications	Following Indications shall be provided :		
		- Mains Presence	Provided	Satis.
		- Battery Charging/ Discharging	Provided	Satis.
		- Output overvoltage (Should act at 115% of rated voltage)	Provided	Satis.
		- Output Overload	Provided	Satis.
		- Battery Low	Provided	Satis.
12.	Metering	Shall have following Digital/Analogue Meters:		
		- AC Input Voltage	Provided	Satis.
		- AC Output Voltage	Provided	Satis.
13.	By pass switch	By Pass switch shall be provided for maintenance	Provided	Satis.
14.	Charging	Charging shall be of Voltage control & current limiting type using SCR/SMPS	Incompliance SCR Type	Satis.

Tested By Checked By Issued By (Head TD&C)

Test Report Certificate - Page 4

ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNS) 1206	4/9/03	4 OF 8

4. Test Results:

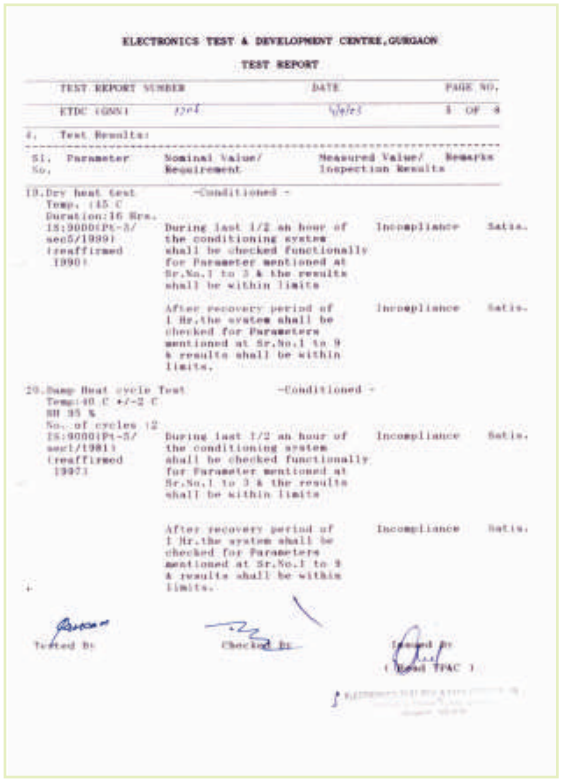
Sl. No.	Parameter	Nominal Value/ Requirement	Measured Value/ Inspection Results	Remarks	
15.	High Voltage Test (IS:616/86)	During the application of High Voltage,there shall be no Flashover/Breakdown.	Withstood the Test.		Satis.
16.	Insulation Resistance (IS:616/86)	Shall not be less than 100 MOhm.		Incompliance	Satis.
17.	Leakage Current (IS:616/86)	Shall not exceed .5mA(Peak)AC.		Incompliance	Satis.

Environmental Tests

18. Burn In Test Temp. :45 C Duration:48 Hrs. with Power ON & full Load.	-Conditioned -			
	During last 1/2 an hour of the conditioning system shall be checked functionally for Parameter mentioned at Sr.No.1 to 3 & the results shall be within limits.		Incompliance	Satis.
	After recovery period of 1 Hr.the system shall be checked for Parameters mentioned at Sr.No.1 to 9 & result shall be within limits.		Incompliance	Satis.

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

Test Report Certificate - Page 5



ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNS) 1206	4/9/03	5 OF 8

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured Value/ Inspection Results	Remarks	
19.	Dry heat test Temp. :45 C Duration:16 Hrs. IS:9000(Pt-3/ sec5/1999) (reaffirmed 1998)	-Conditioned -			
		During last 1/2 an hour of the conditioning system shall be checked functionally for Parameter mentioned at Sr.No.1 to 3 & the results shall be within limits		Incompliance	Satis.
		After recovery period of 1 Hr.the system shall be checked for Parameters mentioned at Sr.No.1 to 9 & results shall be within limits.		Incompliance	Satis.
20.	Damp Heat cycle Test Temp:40 C +/-2 C RH 95 % No. of cycles :2 IS:9000(Pt-5/ sec1/1981) (reaffirmed 1997)	-Conditioned -			
		During last 1/2 an hour of the conditioning system shall be checked functionally for Parameter mentioned at Sr.No.1 to 3 & the results shall be within limits		Incompliance	Satis.
		After recovery period of 1 Hr.the system shall be checked for Parameters mentioned at Sr.No.1 to 9 & results shall be within limits.		Incompliance	Satis.

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

Test Report Certificate - Page 6

ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNS) 1206	4/9/03	5 OF 8

4. Test Results:

Sl. No.	Parameter	Nominal Value/ Requirement	Measured Value/ Inspection Results	Remarks	
19.	Dry heat test Temp. :45 C Duration:16 Hrs. IS:9000(Pt-3/ sec5/1999) (reaffirmed 1998)	-Conditioned -			
		During last 1/2 an hour of the conditioning system shall be checked functionally for Parameter mentioned at Sr.No.1 to 3 & the results shall be within limits		Incompliance	Satis.
		After recovery period of 1 Hr.the system shall be checked for Parameters mentioned at Sr.No.1 to 9 & results shall be within limits.		Incompliance	Satis.
20.	Damp Heat cycle Test Temp:40 C +/-2 C RH 95 % No. of cycles :2 IS:9000(Pt-5/ sec1/1981) (reaffirmed 1997)	-Conditioned -			
		During last 1/2 an hour of the conditioning system shall be checked functionally for Parameter mentioned at Sr.No.1 to 3 & the results shall be within limits		Incompliance	Satis.
		After recovery period of 1 Hr.the system shall be checked for Parameters mentioned at Sr.No.1 to 9 & results shall be within limits.		Incompliance	Satis.

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

Test Report Certificate - Page 7

ELECTRONICS TEST & DEVELOPMENT CENTRE,GURGAON

TEST REPORT

TEST REPORT NUMBER	DATE	PAGE NO.
ETDC (GNS) 1206	4/9/03	7 OF 8

5. Remarks (if any): 1.The report pertains only to the parameters mentioned in the test results.

2.UUT has been tested as per DGS&D specifications provided by indentor.

3. UUT - Unit under test.

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

Test Report Certificate - Page 7

DSP SINE WAVE INVERTER

3 Phase In - 3 Phase Out

5KVA/360V to 100KVA/360V

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

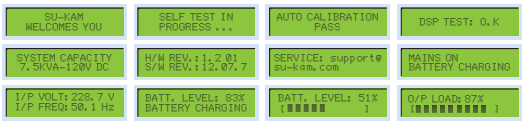
Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES



COLOSSAL SERIES - 5KVA/360V

A healthier alternative to generators

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry……and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 5KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	20	15	10	4
Fan 48 MM	20	15	10	4
CFL 11W	30	15	20	20
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH (30 Nos.)	10 Hrs. 20 Mins.	12 Hrs. 10 Mins.	14 Hrs. 30 Mins.	16 Hrs. 45 Mins.
180 AH (30 Nos.)	13 Hrs. 45 Mins.	16 Hrs. 10 Mins.	19 Hrs. 25 Mins.	22 Hrs. 30 Mins.

Colossal Series

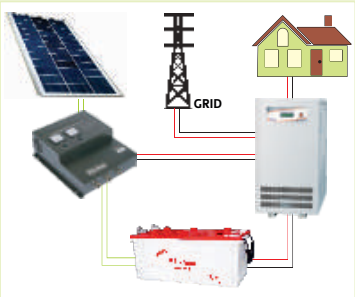
3 Phase In - 3 Phase Out

Technical Specifications

Rating	5KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥90% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	4KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	450mm x 740mm x735mm
Weight Without Packing	115Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



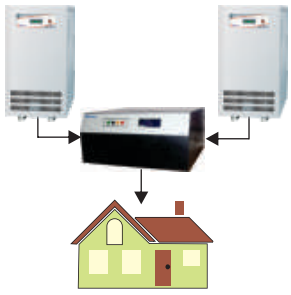
Panel Range: 5000Wp. maximum, Battery 12Vx30

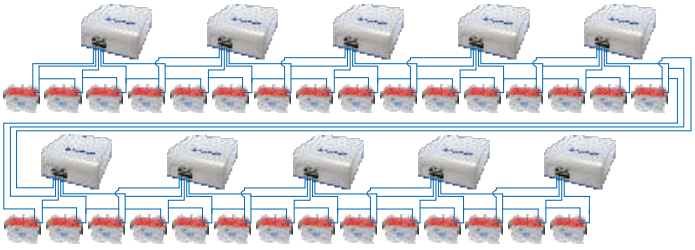
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

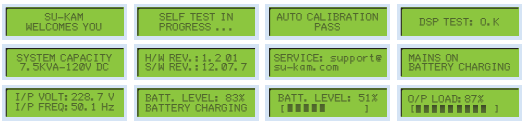
Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES



COLOSSAL SERIES - 7.5KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 7.5KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	6	4	2
Room Cooler	-	-	2	2
Tube Light 40W	25	20	15	10
Fan 48 MM	25	20	15	10
CFL 11W	40	20	15	20
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH (30 Nos.)	7 Hrs. 50 Mins.	8 Hrs. 35 Mins.	10 Hrs. 35 Mins.	10 Hrs.
180 AH (30 Nos.)	10 Hrs. 55 Mins.	12 Hrs.	14 Hrs. 10 Mins.	13 Hrs. 20 Mins.

Colossal Series

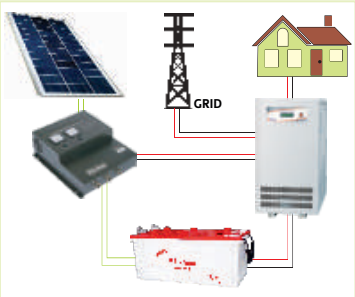
3 Phase In - 3 Phase Out

Technical Specifications

Rating	7.5KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥90% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	6KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	450mm x 740mm x735mm
Weight Without Packing	123Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



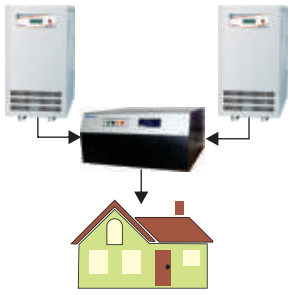
Panel Range: 7500Wp. maximum, Battery 12Vx30

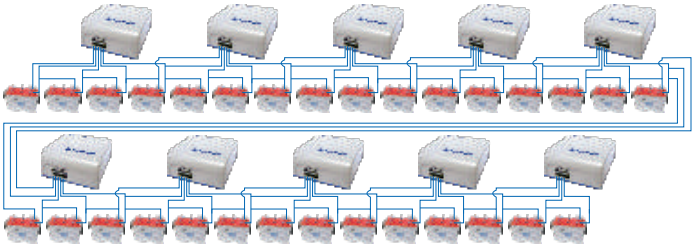
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 7.5KVA-120V DC	H/W REV.:1.2.01 S/W REV.:12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [■■■■■]	O/P LOAD: 87% [■■■■■■■■■]

COLOSSAL SERIES - 10KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 10KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	7	2	2
Room Cooler	-	-	4	4
Tube Light 40W	40	25	20	15
Fan 48 MM	40	25	20	15
CFL 11W	40	25	20	10
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH (30 Nos.)	4 Hrs. 35 Mins.	6 Hrs. 45 Mins.	7 Hrs. 40 Mins.	5 Hrs. 25 Mins.
180 AH (30 Nos.)	6 Hrs. 25 Mins.	9 Hrs. 35 Mins.	10 Hrs. 50 Mins.	8 Hrs.

Colossal Series

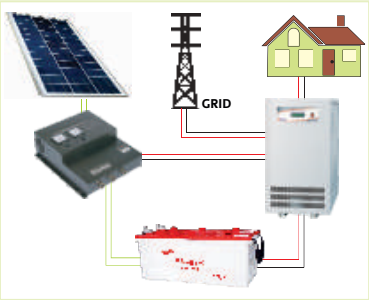
3 Phase In - 3 Phase Out

Technical Specifications

Rating	10KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥90% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	8KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	450mm x 740mm x735mm
Weight Without Packing	133Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 10000Wp. maximum, Battery 12Vx30

Solar Conversion Kit

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Three Phase Static Bypass Switch

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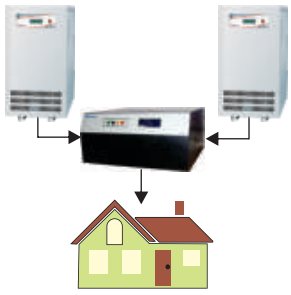

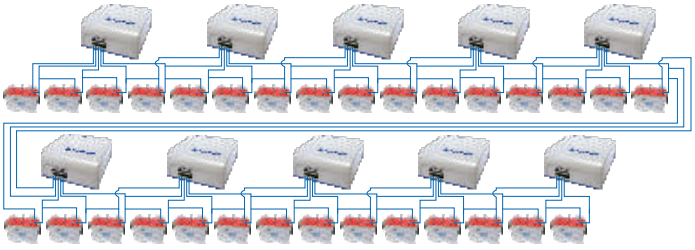

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Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 7.5KVA-120V DC	H/W REV.:1.2.01 S/W REV.:12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [■■■■■]	O/P LOAD: 87% [■■■■■■■■■]

COLOSSAL SERIES - 15KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 15KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	10	4	2
Room Cooler	-	-	6	4
Tube Light 40W	50	40	30	20
Fan 48 MM	50	40	30	20
CFL 11W	50	40	30	15
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH (30 Nos.)	3 Hrs. 30 Mins.	3 Hrs. 50 Mins.	4 Hrs. 30 Mins.	4 Hrs. 40 Mins.
180 AH (30 Nos.)	5 Hrs.	5 Hrs. 20 Mins.	6 Hrs. 20 Mins.	6 Hrs. 45 Mins.

Colossal Series

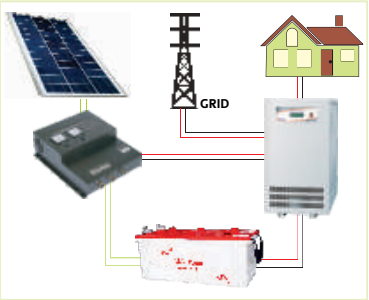
3 Phase In - 3 Phase Out

Technical Specifications

Rating	15KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥90% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	12KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	450mm x 740mm x735mm
Weight Without Packing	160Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



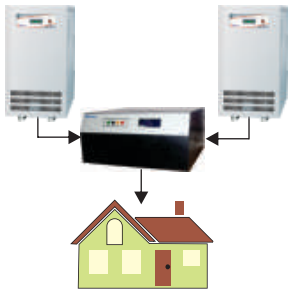
Panel Range: 15000Wp. maximum, Battery 12Vx30

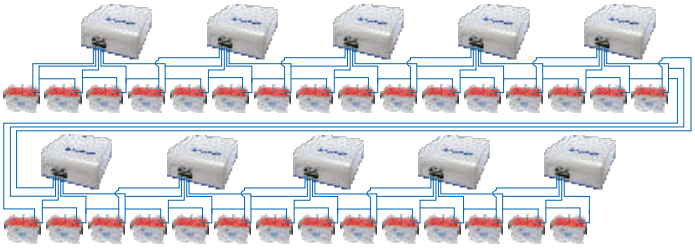
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS ...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 7.5KVA-120V DC	H/W REV.: 1.2.01 S/W REV.: 12.07.7	SERVICE: support@su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [■■■■■]	O/P LOAD: 87% [■■■■■■■■■]

COLOSSAL SERIES - 20KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 20KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	15	10	5
Room Cooler	-	-	5	5
Tube Light 40W	80	50	40	20
Fan 48 MM	80	50	40	20
CFL 11W	80	50	40	20
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
165 AH (30 Nos.)	2 Hrs. 30 Mins.	3 Hrs. 35 Mins.	4 Hrs.	5 Hrs. 10 Mins.
180 AH (30 Nos.)	2 Hrs. 45 Mins.	4 Hrs.	4 Hrs. 30 Mins.	5 Hrs. 50 Mins.

Colossal Series

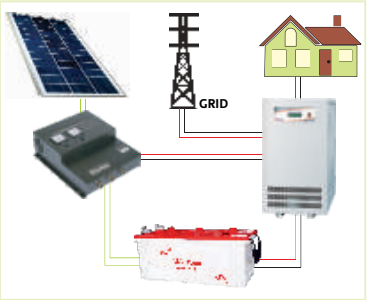
3 Phase In - 3 Phase Out

Technical Specifications

Rating	20KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥90% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	16KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	450mm x 740mm x735mm
Weight Without Packing	190Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 20000Wp. maximum, Battery 12Vx30

Solar Conversion Kit

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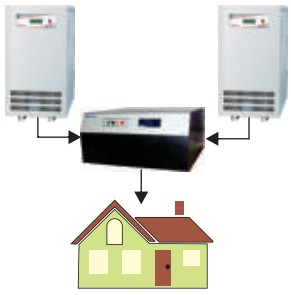
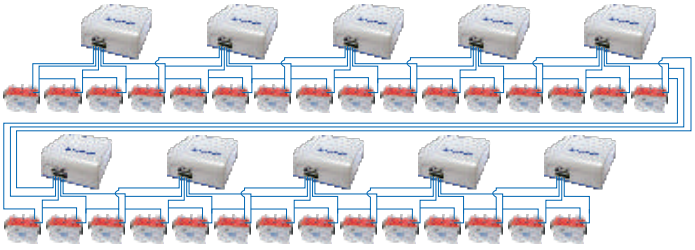
Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





Battery Equalizer

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Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 25KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 25KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	20	10	5
Room Cooler	-	-	5	5
Tube Light 40W	100	60	40	25
Fan 48 MM	100	60	40	25
CFL 11W	100	60	40	25
AC 1.5 T	-	-	-	3
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (30 Nos.)	2 Hrs. 10 Mins.	3 Hrs.	3 Hrs. 45 Mins.	4 Hrs. 20 Mins.
200 AH (30 Nos.)	2 Hrs. 30 Mins.	3 Hrs. 30 Mins.	4 Hrs. 20 Mins.	5 Hrs.

Colossal Series

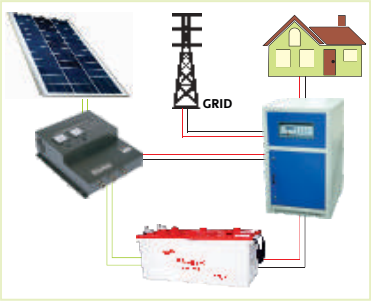
3 Phase In - 3 Phase Out

Technical Specifications

Rating	25KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	20KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	600mm x 780mm x1000 mm
Weight Without Packing	240Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 25000Wp. maximum, Battery 12Vx30

Solar Conversion Kit

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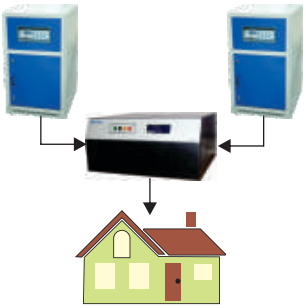
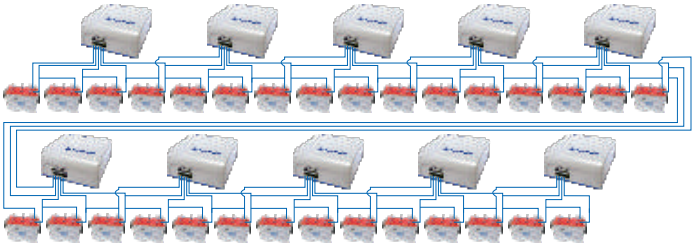
Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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Colossal Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 30KVA/360V

A healthier alternative to generators

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Product Features

- Safe for sensitive equipments
- Heavy Duty
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Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 30KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	20	10	7
Room Cooler	-	-	7	7
Tube Light 40W	110	60	45	30
Fan 48 MM	110	60	45	30
CFL 11W	110	60	45	30
AC 1.5 T	-	-	-	3
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (30 Nos.)	1 Hrs. 45 Mins.	2 Hrs. 40 Mins.	3 Hrs. 50 Mins.	3 Hrs. 40 Mins
200 AH (30 Nos.)	2 Hrs. 10 Mins.	3 Hrs.	4 Hrs. 20 Mins.	4 Hrs. 10 Mins.

Colossal Series

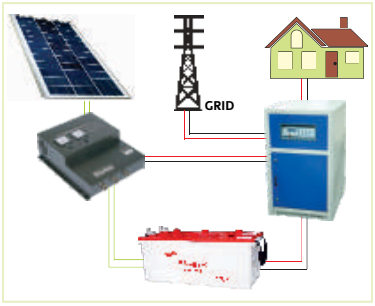
3 Phase In - 3 Phase Out

Technical Specifications

Rating	30KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	24KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	600mm x 780mm x1000 mm
Weight Without Packing	285Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 30000Wp. maximum, Battery 12Vx30

Solar Conversion Kit

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Three Phase Static Bypass Switch

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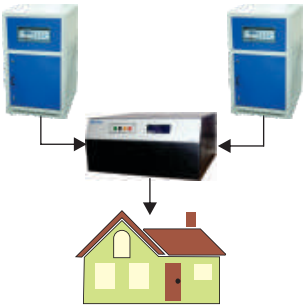

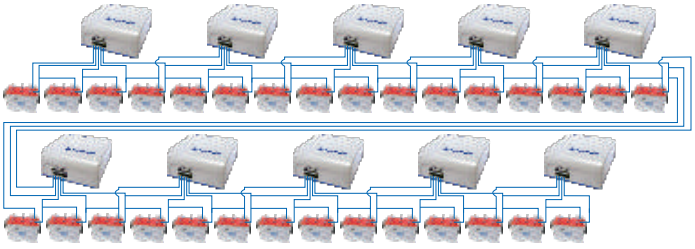

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Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 40KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 40KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	25	15	10
Room Cooler	-	-	10	10
Tube Light 40W	130	75	50	35
Fan 48 MM	130	75	50	35
CFL 11W	130	75	50	35
AC 1.5 T	-	-	-	4
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (30 Nos.)	1 Hr. 25 Mins.	2 Hrs. 20 Mins.	3 Hrs. 10 Mins.	2 Hrs. 45 Mins.
200 AH (30 Nos.)	1 Hr. 45 Mins.	2 Hrs. 45 Mins.	3 Hrs. 35 Mins.	3 Hrs. 10 Mins.

Colossal Series

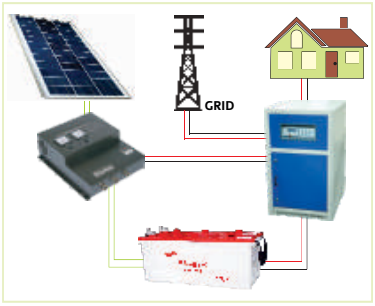
3 Phase In - 3 Phase Out

Technical Specifications

Rating	40KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3.5Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	32KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	600mm x 780mm x1000 mm
Weight Without Packing	330Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



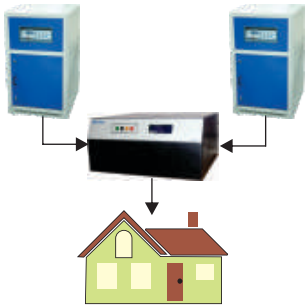
Panel Range: 40000Wp. maximum, Battery 12Vx30

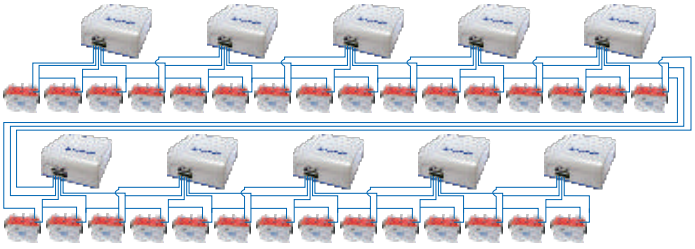
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power. The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.





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.

Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 50KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 50KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	25	15	10
Room Cooler	-	-	10	10
Tube Light 40W	135	80	55	40
Fan 48 MM	135	80	55	40
CFL 11W	135	80	55	40
AC 1.5 T	-	-	-	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (30 Nos.)	1 Hr. 20 Mins.	2 Hrs. 15 Mins.	3 Hrs.	2 Hrs. 20 Mins.
200 AH (30 Nos.)	1 Hr. 40 Mins.	2 Hrs. 35 Mins.	3 Hrs. 20 Mins.	2 Hrs. 40 Mins.

Colossal Series

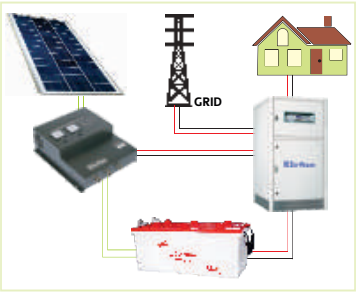
3 Phase In - 3 Phase Out

Technical Specifications

Rating	50KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3.5Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	40KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	755mm x 835mm x 1460mm
Weight Without Packing	190Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 50000Wp. maximum, Battery 12Vx30

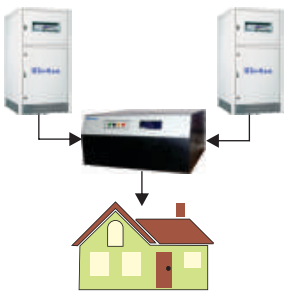
Solar Conversion Kit

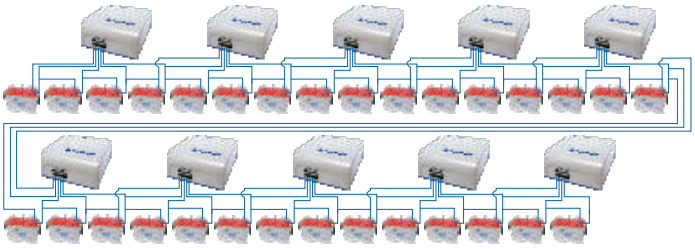
Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. it controls the mains supply to the inverter so that when the battery is fully charged and still solar power 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.

Static Bypass Switch

The Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the best of the two available power sources to the electrical load connected at the output . One source is used as a master and other as the slave. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the slave source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) devices so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output.





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.

Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 65KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

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Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 65KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	25	20	10
Room Cooler	-	-	10	10
Tube Light 40W	140	85	55	45
Fan 48 MM	140	85	55	45
CFL 11W	140	85	55	45
AC 1.5 T	-	-	-	6
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (60 Nos.)	3 Hr. 25 Mins.	4 Hrs. 55 Mins.	6 Hrs. 20 Mins.	4 Hrs. 45 Mins.
200 AH (60 Nos.)	3 Hr. 50 Mins.	5 Hrs. 25 Mins.	7 Hrs. 15 Mins.	5 Hrs. 15 Mins.

Colossal Series

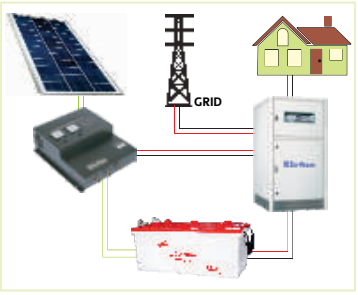
3 Phase In - 3 Phase Out

Technical Specifications

Rating	65KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3.5Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	52KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	755mm x 835mm x 1460mm
Weight Without Packing	240Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 65000Wp. maximum, Battery 12Vx30

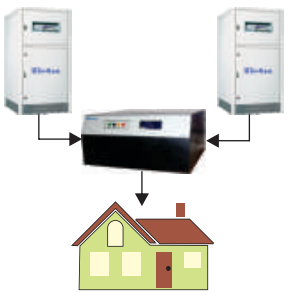
Solar Conversion Kit

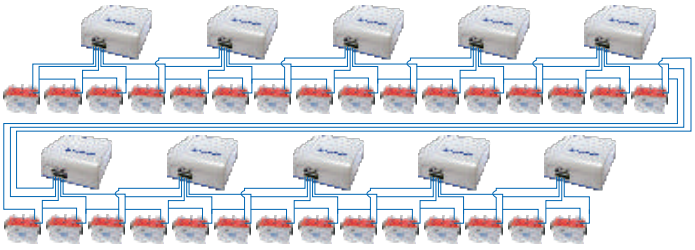
Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. it controls the mains supply to the inverter so that when the battery is fully charged and still solar power 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.

Static Bypass Switch

The Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the best of the two available power sources to the electrical load connected at the output . One source is used as a master and other as the slave. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the slave source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) devices so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output.





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Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 80KVA/360V

A healthier alternative to generators

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Product Features

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- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 80KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	25	20	10
Room Cooler	-	-	15	10
Tube Light 40W	150	90	60	50
Fan 48 MM	150	90	60	50
CFL 11W	150	90	60	50
AC 1.5 T	-	-	-	8
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (60 Nos.)	3 Hrs.	4 Hrs. 35 Mins.	5 Hrs. 20 Mins.	3 Hrs. 55 Mins.
200 AH (60 Nos.)	3 Hrs. 30 Mins.	5 Hrs. 15 Mins.	6 Hrs.	4 Hrs. 25 Mins.

Colossal Series

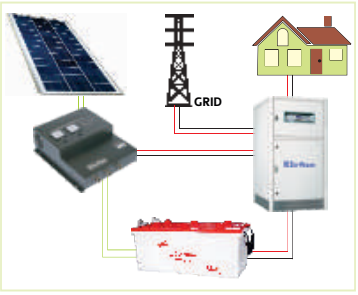
3 Phase In - 3 Phase Out

Technical Specifications

Rating	80KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3.5Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	64KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	800mm x 1035mm x 1560mm
Weight Without Packing	285Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 80000Wp. maximum, Battery 12Vx30

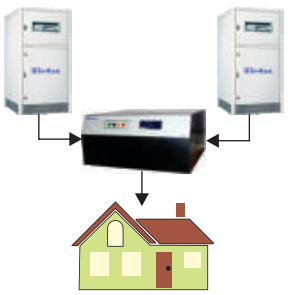
Solar Conversion Kit

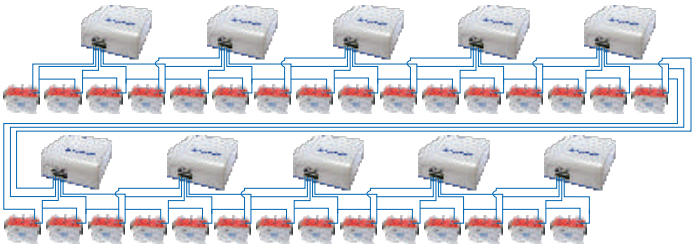
Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. it controls the mains supply to the inverter so that when the battery is fully charged and still solar power 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.

Static Bypass Switch

The Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the best of the two available power sources to the electrical load connected at the output . One source is used as a master and other as the slave. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the slave source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) devices so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output.





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.

Colossal Series

3 Phase In - 3 Phase Out

Colossal INVERTER

RS232
Communication Port

LCD MESSAGES

COLOSSAL SERIES - 100KVA/360V

A healthier alternative to generators

Su-Kam's DSP Sine Wave Inverter – Colossal Series, powered with reliable, regulated and stabilized Pure Sine Wave Output is a complete power generation system that is suitable for all types of commercial establishments and is capable of running everything from Lights to Air Conditioners and Lifts to Elevators, in a most cost effective manner.

Su-Kam's DSP Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid, and is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as a most reliable option to generators at banks/ATM's, hospitals, petrol pumps and shopping malls to name a few.

Principle : Su-Kam's colossal inverter is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Product Features

- Safe for sensitive equipments
- Heavy Duty
- Ease of Operation
- Low Running Cost
- Easy to Install
- High Efficiency and Reliability
- Advanced Communication
- Battery Care System
- Extended Power Back-up Time
- Su-Kam's Soft Start Technology
- Cold Start
- Free of spikes and surges
- In-built TDR for compressors based applications e.g. AC

Electronic Protection Updates

- Auto Self-Testing System
- Overload Short Circuit Protection
- Automatic protection for low and high voltage
- AC main cutout

Displays

- Multifunction LCD display
- Power fail duration on LCD
- Multiple selection Switches

Applications

- Banks / ATM
- BPOs / Call Centers
- Data centers
- Deep freezers
- Elevators & Escalators
- Hospitals
- Restaurants & Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs & Discotheques
- Schools / Educational Institutions
- Shopping malls / Super Markets
- Telecom Towers
- Air conditioner
- CNC Machine / Textile industry.....and many more

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL 100KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	25	25	15
Room Cooler	-	-	20	15
Tube Light 40W	160	100	70	60
Fan 48 MM	160	100	70	60
CFL 11W	160	100	70	60
AC 1.5 T	-	-	-	10
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (60 Nos.)	2 Hrs. 50 Mins.	4 Hrs. 10 Mins.	4 Hrs. 20 Mins.	3 Hrs.
200 AH (60 Nos.)	3 Hrs. 15 Mins.	4 Hrs. 45 Mins.	4 Hrs. 55 Mins.	3 Hrs. 20 Mins.

Colossal Series

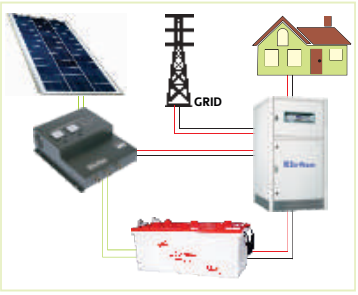
3 Phase In - 3 Phase Out

Technical Specifications

Rating	100KVA
INPUT PARAMETERS	
Input AC Voltage Range	160V-280V± 10V (P-N) , 280V - 480V±10V (P-P)
Input Frequency Range	45 to 55 Hz.
Charging Current	3A-20A± 10%
Change Over Time	≤ 3.5Sec (Max. Mains to Inverter)
OUTPUT PARAMETERS	
Voltage Regulation	230V / 240V± 10% (P-N), 400V / 415V± 10% (P-P)
Frequency regulation	50Hz±0.1Hz
Peak Efficiency at inverter	≥92% (100% Load)
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<5 % (at linear load)
Crest Factor	3 : 1
Full load output Power	80KW
Over Load Handling capacity	≥110% , <150% FOR 5 Minutes to 16 sec. / ≥ 200%, < 300% FOR 4 Sec. to 2 sec.
Short Circuit Protection	Yes
BATTERY PARAMETERS	
Nominal DC Voltage	360VDC
DC Voltage Low cut	330±2V
DC Boost Voltage*	408±2V
OTHERS	
Dimensions (In mm) W X D X H	800mm x 1035mm x 1560mm
Weight Without Packing	330Kg (approx.)
Operating temperature	0°C to 45°C
Relative Humidity	0 to 95% - Non condensing
Communication Interface	RS 232
Acoustic Noise (at one meter)	≤65db
Storage Temperature	0°C to 50°C
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 100000Wp. maximum, Battery 12Vx30

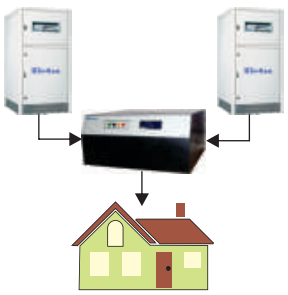
Solar Conversion Kit

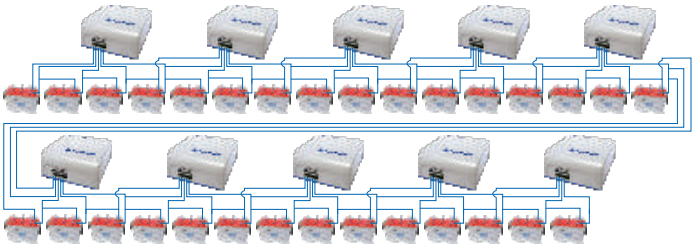
Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. It can be connected with any existing HUPS/inverter and convert it into a solar powered system. it controls the mains supply to the inverter so that when the battery is fully charged and still solar power 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.

Static Bypass Switch

The Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the best of the two available power sources to the electrical load connected at the output . One source is used as a master and other as the slave. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the slave source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) devices so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output.





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.

COLOSSAL+ SERIES

3 Phase In - 3 Phase Out

5KVA/180V to 20KVA/180V

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Colossal+ Series

3 Phase In - 3 Phase Out

COLOSSAL+ SERIES - 5KVA/180V

Designed to protect Lifts and Escalators

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Product Features

- Battery Charging even if 2 Phases available or all 3 Phases low up to 140VAC.
- Double protection for overload & short circuit.
- Output over, Input over and under voltage protection.
- Battery overcharge and deep discharge protection.
- High temperature warning and over temperature shutdown.
- 20 x 4 lines, liquid crystal display panel to display inverter parameters.
- Interface the inverter with computer through RS-232 port. Remote monitoring, analysis & control using Power Doc software.
- Great Power Saving as compared to Generators. Generator compatible.
- The System Provides the Back Up for 3 Minutes only. As in this time the ARD has done its task of Moving the Lift to the Nearest Floor. As a Result the Traveler can be landed to the nearest Floor.
- It Ensures that the inverter is not Switched Off even when the Primary Power (The Grid Power) comes Back in this time gap of 3 minutes. Because this will make the Drive of Lift Erratic.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- User friendly display & Audible alarms

Applications

- Lifts
- Escalators
- Industrial Motor drives
- Lighting/ Industrial/ Commercial

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL+ 5KVA/180V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	10	15	10	2
Fan 48 MM	10	15	10	2
CFL 11W	15	15	20	10
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	10 Hrs. 20 Mins.	5 Hrs. 20 Mins.	6 Hrs. 40 Mins.	10 Hrs. 30 Mins.
180 AH	13 Hrs. 50 Mins	7 Hrs. 40 Mins.	9 Hrs. 40 Mins.	14 Hrs. 10 Mins.

Colossal+ Series

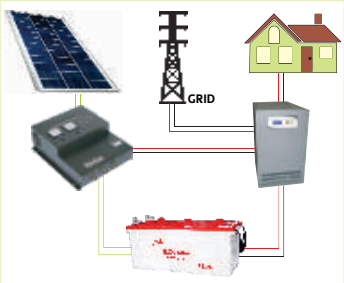
3 Phase In - 3 Phase Out

Technical Specifications

Mains Ac Input Range	160V-280V (P-N)
Mains Ac Low Cut	160V ± 5V (P-N)
Mains Ac Low Cut Recovery	170V ± 5V (P-N)
Mains Ac High Cut	280V ± 5V (P-N)
Mains Ac High Cut Recovery	270V ± 5V (P-N)
Max. Mains To Inverter Change Over Time	< 1 Sec
Max. Inverter To Mains Change Over Time	<200 mSec
Max. Output At Inverter Mode	230V ± 2%
Min. Output At Inverter Mode	220V ± 5 V
Output Waveform In Inverter Mode	Pure Sine Wave
Output Frequency In Inverter Mode	50.0Hz ± 0.1Hz
Full Load	4000W Resistive Load
Peak Efficiency In Inverter Mode	>90%
Total Harmonic Distortion	< 3% For Linear Load
	<5 % For Non-linear Load
Overload Handling Capacity	110% for 8 Minutes
	125% for 1 Minute
	150% for 15 Seconds
	200% for 10 Seconds
	300% for 3 Seconds
Short Circuit Protection	>300% load (1Sec)
Nominal Battery Voltage	180V
Recommended Battery Ah	28Ah-200Ah
Charger	1-PHASE
Max Charging Current	3Amp- 20Amp, As per Battery Ah
Battery Low Cut Warning	162V ± 0.5 V
Battery Low Protection	157.5V ± 0.5 V
Battery High Protection	225V ± 0.5V
Dimensions (In mm) W X H X D	350mm x 550mm x 650mm
Weight (Kg) Without Packing	98Kg
Noise Level	<50dB
Ambient	<45°C
Communication Interface	Yes (optional)
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 5000Wp. maximum, Battery 12Vx15

Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. 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 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.

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.

Colossal+ Series

3 Phase In - 3 Phase Out

COLOSSAL+ SERIES - 7.5KVA/180V

Designed to protect Lifts and Escalators

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Product Features

- Battery Charging even if 2 Phases available or all 3 Phases low up to 140VAC.
- Double protection for overload & short circuit.
- Output over, Input over and under voltage protection.
- Battery overcharge and deep discharge protection.
- High temperature warning and over temperature shutdown.
- 20 x 4 lines, liquid crystal display panel to display inverter parameters.
- Interface the inverter with computer through RS-232 port. Remote monitoring, analysis & control using Power Doc software.
- Great Power Saving as compared to Generators. Generator compatible.
- The System Provides the Back Up for 3 Minutes only. As in this time the ARD has done its task of Moving the Lift to the Nearest Floor. As a Result the Traveler can be landed to the nearest Floor.
- It Ensures that the inverter is not Switched Off even when the Primary Power (The Grid Power) comes Back in this time gap of 3 minutes. Because this will make the Drive of Lift Erratic.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- User friendly display & Audible alarms

Applications

- Lifts
- Escalators
- Industrial Motor drives
- Lighting/ Industrial/ Commercial

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL+ 7.5KVA/180V				
Load Options	A	B	C	D
TV 19-21"	-	6	4	2
Room Cooler	-	-	2	2
Tube Light 40W	25	20	15	10
Fan 48 MM	25	20	15	10
CFL 11W	40	20	15	20
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	3 Hrs. 20 Mins.	3 Hrs. 40 Mins.	4 Hrs. 30 Mins.	4 Hrs. 10 Mis.
180 AH	4 Hrs. 40 Mins.	5 Hrs. 10 Mins.	6 Hrs. 20 Mins.	6 Hrs.

Colossal+ Series

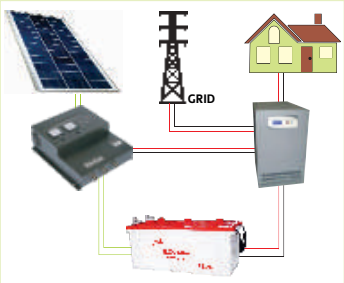
3 Phase In - 3 Phase Out

Technical Specifications

Mains Ac Input Range	160V-280V (P-N)
Mains Ac Low Cut	160V ± 5V (P-N)
Mains Ac Low Cut Recovery	170V ± 5V (P-N)
Mains Ac High Cut	280V ± 5V (P-N)
Mains Ac High Cut Recovery	270V ± 5V (P-N)
Max. Mains To Inverter Change Over Time	< 1 Sec
Max. Inverter To Mains Change Over Time	<200 mSec
Max. Output At Inverter Mode	230V ± 2%
Min. Output At Inverter Mode	220V ± 5 V
Output Waveform In Inverter Mode	Pure Sine Wave
Output Frequency In Inverter Mode	50.0Hz ± 0.1Hz
Full Load	6000W Resistive Load
Peak Efficiency In Inverter Mode	>92%
Total Harmonic Distortion	< 3% For Linear Load
	<5 % For Non-linear Load
Overload Handling Capacity	110% for 8 Minutes
	125% for 1 Minute
	150% for 15 Seconds
	200% for 10 Seconds
	300% for 3 Seconds
Short Circuit Protection	>300% load (1Sec)
Nominal Battery Voltage	180V
Recommended Battery Ah	45Ah-200Ah
Charger	1-PHASE
Max Charging Current	3Amp- 20Amp, As per Battery Ah
Battery Low Cut Warning	162V ± 0.5 V
Battery Low Protection	157.5V ± 0.5 V
Battery High Protection	225V ± 0.5V
Dimensions (In mm) W X H X D	350mm x 550mm x 650mm
Weight (Kg) Without Packing	98Kg
Noise Level	<50dB
Ambient	<45°C
Communication Interface	Yes (optional)
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 7500Wp. maximum, Battery 12Vx15

Solar Conversion Kit

Solarcon hybrid solar charge controller solution overcomes the challenges in the existing solutions. 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 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.

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Colossal+ Series

3 Phase In - 3 Phase Out

COLOSSAL+ SERIES - 20KVA/180V

Designed to protect Lifts and Escalators

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Product Features

- Battery Charging even if 2 Phases available or all 3 Phases low up to 140VAC.
- Double protection for overload & short circuit.
- Output over, Input over and under voltage protection.
- Battery overcharge and deep discharge protection.
- High temperature warning and over temperature shutdown.
- 20 x 4 lines, liquid crystal display panel to display inverter parameters.
- Interface the inverter with computer through RS-232 port. Remote monitoring, analysis & control using Power Doc software.
- Great Power Saving as compared to Generators. Generator compatible.
- The System Provides the Back Up for 3 Minutes only. As in this time the ARD has done its task of Moving the Lift to the Nearest Floor. As a Result the Traveler can be landed to the nearest Floor.
- It Ensures that the inverter is not Switched Off even when the Primary Power (The Grid Power) comes Back in this time gap of 3 minutes. Because this will make the Drive of Lift Erratic.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- User friendly display & Audible alarms

Applications

- Lifts
- Escalators
- Industrial Motor drives
- Lighting/ Industrial/ Commercial

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL+ 20KVA/180V				
Load Options	A	B	C	D
TV 19-21"	-	15	10	5
Room Cooler	-	-	5	5
Tube Light 40W	80	50	40	20
Fan 48 MM	80	50	40	20
CFL 11W	80	50	40	20
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
180 AH (30 Nos.)	1 Hrs.	1 Hrs. 35 Mins.	1 Hrs. 50 Mins.	2 Hrs. 30 Mins.
200 AH (30 Nos.)	1 Hrs. 20 Mins.	1 Hrs. 50 Mins.	2 Hrs. 10 Mins.	2 Hrs. 50 Mins.

Colossal+ Series

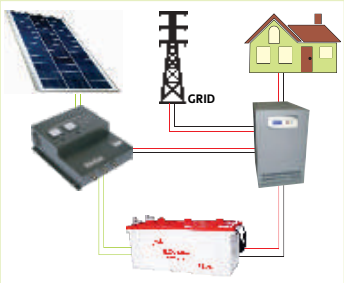
3 Phase In - 3 Phase Out

Technical Specifications

Mains Ac Input Range	160V-280V (P-N)
Mains Ac Low Cut	160V ± 5V (P-N)
Mains Ac Low Cut Recovery	170V ± 5V (P-N)
Mains Ac High Cut	280V ± 5V (P-N)
Mains Ac High Cut Recovery	270V ± 5V (P-N)
Max. Mains To Inverter Change Over Time	< 1 Sec
Max. Inverter To Mains Change Over Time	<200 mSec
Max. Output At Inverter Mode	230V ± 2%
Min. Output At Inverter Mode	220V ± 5 V
Output Waveform In Inverter Mode	Pure Sine Wave
Output Frequency In Inverter Mode	50.0Hz ± 0.1Hz
Full Load	16KW Resistive Load
Peak Efficiency In Inverter Mode	>92%
Total Harmonic Distortion	< 3% For Linear Load
	<5 % For Non-linear Load
Overload Handling Capacity	110% for 8 Minutes
	125% for 1 Minute
	150% for 15 Seconds
	200% for 10 Seconds
	300% for 3 Seconds
Short Circuit Protection	>300% load (1Sec)
Nominal Battery Voltage	180V
Recommended Battery Ah	45Ah-200Ah
Charger	1-PHASE
Max Charging Current	3Amp- 20Amp, As per Battery Ah
Battery Low Cut Warning	162V ± 1 V
Battery Low Protection	157V ± 1 V
Battery High Protection	225V ± 1V
Dimensions (In mm) W X H X D	450mm x 750mm x 700mm
Weight (Kg) Without Packing	200Kg
Noise Level	<50dB
Ambient	<45°C
Communication Interface	Yes (optional)
Display	20 X 4 Line LCD

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 20000Wp. maximum, Battery 12Vx15

Solar Conversion Kit

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COLOSSAL B+ SERIES
BI-DIRECTIONAL INVERTER

3 Phase In - 3 Phase Out

5KVA/96V to 10KVA/180V

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Colossal B+ Series

3 Phase In - 3 Phase Out

COLOSSAL B+ SERIES - 5KVA/96V

Designed to protect Lifts and Escalators

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Product Features

- Battery Charging even if 2 Phases available or all 3 Phases low up to 140VAC.
- Double protection for overload & short circuit.
- Output over, Input over and under voltage protection.
- Battery overcharge and deep discharge protection.
- High temperature warning and over temperature shutdown.
- 20 x 4 lines, liquid crystal display panel to display inverter parameters.
- Interface the inverter with computer through RS-232 port. Remote monitoring, analysis & control using Power Doc software.
- Great Power Saving as compared to Generators. Generator compatible.
- The System Provides the Back Up for 3 Minutes only. As in this time the ARD has done its task of Moving the Lift to the Nearest Floor. As a Result the Traveler can be landed to the nearest Floor.
- It Ensures that the inverter is not Switched Off even when the Primary Power (The Grid Power) comes Back in this time gap of 3 minutes. Because this will make the Drive of Lift Erratic.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- User friendly display & Audible alarms

Applications

- Lifts
- Escalators
- Industrial Motor drives
- Lighting/ Industrial/ Commercial

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL B+ 5KVA/96V				
Load Options	A	B	C	D
TV 19-21"	-	4	2	1
Room Cooler	-	-	2	-
Tube Light 40W	10	15	10	2
Fan 48 MM	10	15	10	2
CFL 11W	15	15	20	10
AC 1.5 T	-	-	-	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	4 Hrs. 40 Mins.	2 Hrs. 30 Mins	3 Hrs.	4 Hrs. 50 Mins.
180 AH	6 Hrs. 40 Mins.	3 Hrs. 30 Mins.	4 Hrs. 20 Mins	7 Hrs.

Colossal B+ Series

3 Phase In - 3 Phase Out

Technical Specifications

Mains Ac Input Range	170V-270V± 6V (P-N)	
Mains Ac Low Cut	170V±6V (P-N)	
Mains Ac Low Cut Recovery	180v±6v (p-n)	
Mains Ac High Cut	270v±6v (p-n)	
Mains Ac High Cut Recovery	260v±6v (p-n)	
Mains Ac Frequency Low Cut	<=45hz±1hz	
Mains Ac Frequency Low Cut Recovery	>=47.5hz±1hz	
Mains Ac Input Power Factor To Charger	0.70-0.90	
Max. Mains To Inverter Change Over Time	20 +/- 10 Msec (approx.) At Full Load	
Max. Inverter To Mains Change Over Time	30 +/- 20 Msec (approx.) At Full Load	
Battery Charging Current	C/10 (15 Amps +/- 2 Amps)/ (7 Amps +/- 2 Amps)/ (20 Amps +/- 2 Amps) -	
Settable		
Inverter Output Voltage Regulation At Balance Load	230+/-2% (phase To Neutral) Vac - 3 Phase 4 Wire (p-n)	
"inverter Output Frequency regulation"	50hz±0.5hz	
"inverter Output Voltage Correction On Transients	2 Cycle ± 2 Cycle Of Output Ac (For 100% Dynamic Loading)	
(transient Response)"		
Efficiency In Inverter Mode	≥89%	
Output Waveform	Pure Sine Wave	
Output Voltage Thd (linear Resistive Load)	Less Than 3%	
Output Voltage Thd (non Linear Rl Load)	Less Than 5%	
Crest Factor	3:1 Typical	
Load Power Factor	0.8 Lag To Unity	
Full Load Resistive	4kw; 5.8a±1a Per Phase	
Over Load Handling Capacity	>=110% & < 150% For 5 Min To 20 Sec	
	>=150% & < 250% for 20 sec	
	>=250% & < 300% for 15 sec to 5 sec	
	>= 300% for 2 sec	
Short Circuit Protection	>300% of Output Inverter Load (<=1Sec)	
Nominal Dc Voltage	96VDC	
Recommended Battery Ah	70AH/150AH/200AH	
Charger	3 Phase	
Max Charging Current	7Amp/15Amp/20Amp, As per Battery AH	
Battery Charging Voltage Range	50 VDC – 120 VDC	
DC Voltage Low Cut	85±2V	
DC Voltage Low Cut Warning	87±2V	
Features	System:	User Interface:
	1) Charger AC Input PF close to Unity.	1) 20x4 Line LCD Display
	2) Both Charger and Inverter through Single IGBT/Transformer Bridge.	2) Mode dependent LCD Display Parameter.
		3) LCD Hold/Scroll Switch.
	3) AC Input Equiped with Static Switch Feature.	4) Inverter ON/OFF Switch.
	4) Negligible Change Over Time.	5) Battery Type Selection Switch.
	5) Fully DSP(Single Chip) Control in both Charger and Inverter Mode.	6) RS232 PC Interface.
		7) Battery Reverse connection Indication.
Low Battery Protection	System In Standby (Low Battery Reset When Mains Available to	
System)		
Dimensions (in mm) W X H X D	350 mm X 665 mm X 590 mm	
Weight(Kg) Without Packing	84.80Kg (without Batteries)	
Acoustic Noise @ 1 Mtr	< 50dB	
SAFETY		
High Voltage Test	Input to Earth	2KV at leakage current of 5mA 1min.
	Output to Earth	2KV at leakage current of 5mA 1min.
IR Test	Between Input & Earth at 500VDC	>5MΩ
	Between Output & Earth at 500VDC	>5MΩ
Earth Leakage Current	"in Mains mode at input 260V & full load condition"	< 2.5mA
	in backup mode at full load condition.	< 2.5mA
ENVIRONMENTAL		
Operating Environment	0 - 45 deg C	

Specifications are subject to change without prior notice.

Colossal B+ Series

3 Phase In - 3 Phase Out

COLOSSAL B+ SERIES - 10KVA/180V

Designed to protect Lifts and Escalators

Su-Kam's Bidirectional Inverter is ideal Power converter has developed and patented revolutionary new Power Topology that will improves both energy and cost efficiency for specifically all kind of applications and specially designed to keep consider some extra features applications as follows,

Product Features

- Battery Charging even if 2 Phases available or all 3 Phases low up to 140VAC.
- Double protection for overload & short circuit.
- Output over, Input over and under voltage protection.
- Battery overcharge and deep discharge protection.
- High temperature warning and over temperature shutdown.
- 20 x 4 lines, liquid crystal display panel to display inverter parameters.
- Interface the inverter with computer through RS-232 port. Remote monitoring, analysis & control using Power Doc software.
- Great Power Saving as compared to Generators. Generator compatible.
- The System Provides the Back Up for 3 Minutes only. As in this time the ARD has done its task of Moving the Lift to the Nearest Floor. As a Result the Traveler can be landed to the nearest Floor.
- It Ensures that the inverter is not Switched Off even when the Primary Power (The Grid Power) comes Back in this time gap of 3 minutes. Because this will make the Drive of Lift Erratic.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- User friendly display & Audible alarms

Applications

- Lifts
- Escalators
- Industrial Motor drives
- Lighting/ Industrial/ Commercial

LOAD CHART, APPLICATIONS & BACK-UP TIME

COLOSSAL B+ 10KVA/180V				
Load Options	A	B	C	D
TV 19-21"	-	7	2	2
Room Cooler	-	-	4	4
Tube Light 40W	40	25	20	15
Fan 48 MM	40	25	20	15
CFL 11W	40	25	20	10
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	1 Hr. 55 Mins.	2 Hrs. 55 Mins.	3 Hrs. 20 Mins.	2 Hrs. 15 Mins.
180 AH	2 Hrs. 50 Mins.	4 Hrs.	4 Hrs. 40 Mins.	3 Hrs. 25 Mins.

Colossal B+ Series

3 Phase In - 3 Phase Out

Technical Specifications

Mains Ac Input Range	170V-270V± 6V (P-N)	
Mains Ac Low Cut	170V±6V (P-N)	
Mains Ac Low Cut Recovery	180V±6V (P-N)	
Mains Ac High Cut	270V±6V (P-N)	
Mains Ac High Cut Recovery	260V±6V (P-N)	
Mains Ac Frequency Low Cut	<=45Hz±1Hz	
Mains Ac Frequency Low Cut Recovery	>=47Hz±1Hz	
Mains Ac Input Power Factor To Charger	0.70-0.90	
Max. Mains To Inverter Change Over Time	20 +/- 10 msec (Approx.) at Full Load	
Max. Inverter To Mains Change Over Time	30 +/- 20 msec (Approx.) at Full Load	
Battery Charging Current	C/10 (15 Amps +/- 2 Amps)/ (7 Amps +/- 2 Amps)/ (20 Amps +/- 2 Amps) -	
Settable		
Inverter Output Voltage Regulation At Balance Load	230+/-2% (Phase to Neutral) VAC - 3 phase 4 wire (P-N)	
"inverter Output Frequencyregulation"	50Hz±0.5Hz	
"inverter Output Voltage Correction On Transients	2 cycle ± 2 cycle of output AC (For 100% Dynamic loading)	
(Transient Response)"		
Efficiency In Inverter Mode	≥90%	
Output Waveform	Pure Sine Wave	
Output Voltage Thd (Linear resistive Load)	less than 3%	
Output Voltage Thd (Non Linear RL Load)	less than 5%	
Crest Factor	3:1 typical	
Load Power Factor	0.8 lag to unity	
Full Load Resistive	8KW; 11.7A±1A per phase	
Over Load Handling Capacity	>=110% & < 150% for 5 min to 15 sec	
	>=150% & < 200% for 15 sec to 5 sec	
	>=200% & < 300% for 4 sec to 2 sec	
	>= 300% for 1 sec	
Short Circuit Protection	>300% of Output Inverter Load (<=1Sec)	
Nominal Dc Voltage	180VDC	
Recommanded Battery Ah	70AH/150AH/200AH	
Charger	3 Phase	
Max Charging Current	7Amp/15Amp/20Amp, As per Battery AH	
Battery Charging Voltage Range	120 VDC – 220 VDC	
Dc Voltage Low Cut	165±2V	
Dc Voltage Low Cut Warning	168±2V	
Features	System:	User Interface:
	1) Charger AC Input PF close to Unity.	1) 20x4 Line LCD Display
	2) Both Charger and Inverter through Single	2) Mode dependent LCD Display Parameter.
	IGBT/Transformer Bridge.	3) LCD Hold/Scroll Switch.
	3) AC Input Equiped with Static Switch Feature.	4) Inverter ON/OFF Switch.
	4) Negligible ChangeOver Time.	5) Battery Type Selection Switch.
	5) Fully DSP(Single Chip) Control in both Charger	
	and Inverter Mode.	
Dimensions (in mm) W X H X D	450 mm X 735 mm X 745 mm	
Weight(kg) Without Packing	73.80Kg (without Batteries)	
Acoustic Noise @ 1 Min	< 50dB	
SAFETY		
High Voltage Test	Input to Earth	2KV at leakage current of 5mA 1min.
	Output to Earth	2KV at leakage current of 5mA 1min.
Ir Test	Between Input & Earth at 500VDC	>5MΩ
	Between Output & Earth at 500VDC	>5MΩ
Earth Leakage Current	"In Mains mode at Input 260V & full load condition"	< 2.5mA
	In backup mode at full load condition.	< 2.5mA
ENVIRONMENTAL		
Operating Environment	0 - 45 deg C	
Operating Relative Humidity	0 - 95% (non condensing)	
Storage Temperature	0 - 50 deg C	

Specifications are subject to change without prior notice.

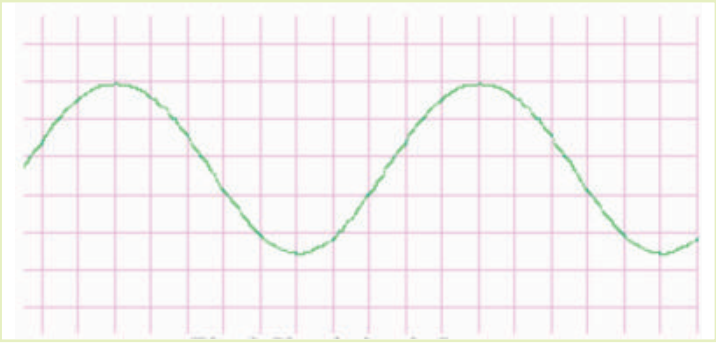
TECHNOLOGY ADVANTAGES

SINE WAVE TECHNOLOGY

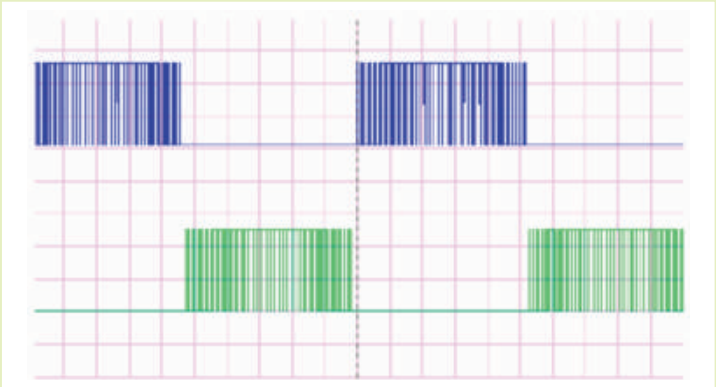
A need for reasonable power rating UPS is required to smoothly operate electrical and electronic appliances. Most of the commercially available UPS are actually square wave UPSs or quasi sine wave UPSs. Lights and fans can only be switched with the help of them and other electronic devices cannot be 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.



Simulation in Proteus



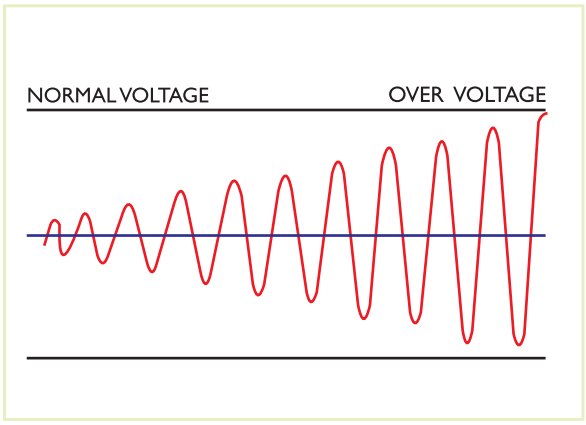
PWM applied on two sides of bridge

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.

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

POWER MANAGER SOFTWARE FOR TOTAL CONTROL AND COMMUNICATION

POWER MANAGER (Multiple User Local Monitoring Software)

The Su-Kam DSP Sine Wave Inverter – Colossal Series (3 Phase Products) have an RS-232 Interface for the Power Manager. This user-friendly Communication Software controls and monitors inverter performance and programs inverter commands. An easy- to- use software, it is based on the RS 232 world standard for interfacing Digital Signal Processor with computers. The Power Manager allows you to program all the commands to be performed by it automatically. This software is very useful for communication systems including Satellite Systems, Telecom BTS Sites, Air Traffic Control Systems, Internet Nodes, Bank ATM and any other application requiring maximum reliability and availability of high quality power such as computer labs, offices, biomedical instruments, telecommunication systems and industrial establishments. It ensures maximum safety for high-risk applications. Once the inverter is installed, the user need not worry about interruption, low battery level or any other damage, which would have occurred otherwise.

A licensed copy of the software need to be installed and run on the PC connected to the power system through which it starts processing the data.

CHARACTERISTICS

- Constantly informs user of the status of the inverter, whether locally or by sending messages to users connected to the network. Normally, the message contains information about overload, Short Circuit, output, battery voltage low or battery voltage high, if etc.
- Logs on important inverter parameters like input voltage, frequency, output voltage, output frequency; output VA and battery voltage continuously to enable the user to check the performance at any time. Data logging enables the user to check the performance of inverter apart from knowing the status of the battery.
- Provides a standard control and monitoring capability, as it uses the TCP/IP communication protocol. It supports all operating systems such as Windows 98, 2000, Me, XP and NT. It also works on various Linux versions such as Redhat, Debian, Slackware, Mandrake etc. It also provides the user with the added functionality of connecting himself to the internet systems situated in different locations by using either a dedicated network (intranet) or the Internet.

SOFTWARE FUNCTIONS

- **Graphical Monitoring of the Inverter status:** Easy to use powerful tool that allows monitoring the Inverter Parameters like Input Voltage, Input Frequency, Output Voltage, Output Frequency, Battery Status, Load Status in Graphical form.
- **Detailed Display of all Data:** Provides on screen, all the data required to make an accurate and speedy diagnosis of the Inverter operations.
- **Alarm Notification via e-mail and SMS:** Can be configured to automatically notify an alarm via an e-mail or SMS message. In case of emergency conditions like Overload, Short Circuit, Battery Voltage low High Battery Voltage etc. to 4 users.
- **Programming of Commands:** The commands normally carried out by the users are programmable so that these are performed automatically e.g. shutting down and switching on the systems at programmed time interval.
- Option of Multiple User format available.

POWERDOC SOFTWARE FOR REMOTE MONITORING & MANAGEMENT

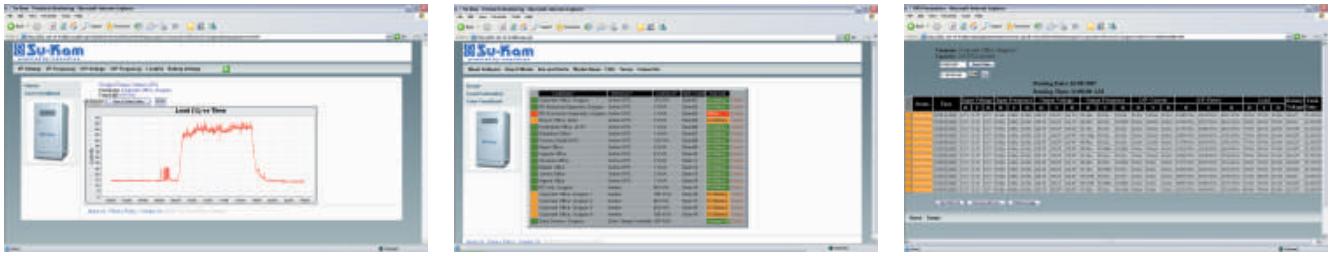
POWERDOC

(Web Based Remote Monitoring and Management Software)

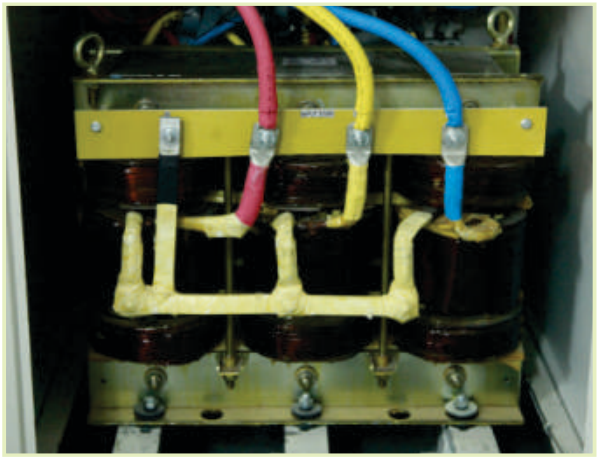
Su-Kam has developed a web-based application for real-time management of its DSP Sine Wave Inverter without using the SNMP hardware. Su-Kam's Colossal Series Inverters, installed anywhere in the world, can now be centrally monitored and controlled by the user(s). This unique and fully validated software solution allows various parameters of the systems to be checked, including load and status of each system.

CHARACTERISTICS

- For central monitoring of system parameters at various locations, for prioritizing shut down of the load, if the battery is running low, without visiting the installation sites.
- Suitable for all unmanned locations or mission critical applications, where Power Backup Systems are installed and where their assured availability is essential and critical. For example ATMs, Telecom Towers, Satellite based systems, fully networked chain of Retail Stores, chain of Multiplexes, their supply chain systems, online process control equipment etc.
- Managing / scheduling shutdown from a remote location.
- Monitoring quality of the power generated by the inverter and grid power.
- Data logging of System parameters at defined time intervals which is also plotted in graphical form for easy analysis and review of the grid power in terms of fluctuations, number of outages and resultant blackouts/ brownouts etc.
- Reassigning the values of the critical decision making set points, e.g Short Circuit, Overload, Battery Low, Output Voltage etc.



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 **2 years** on its transformers. The 2 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 his 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.

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.

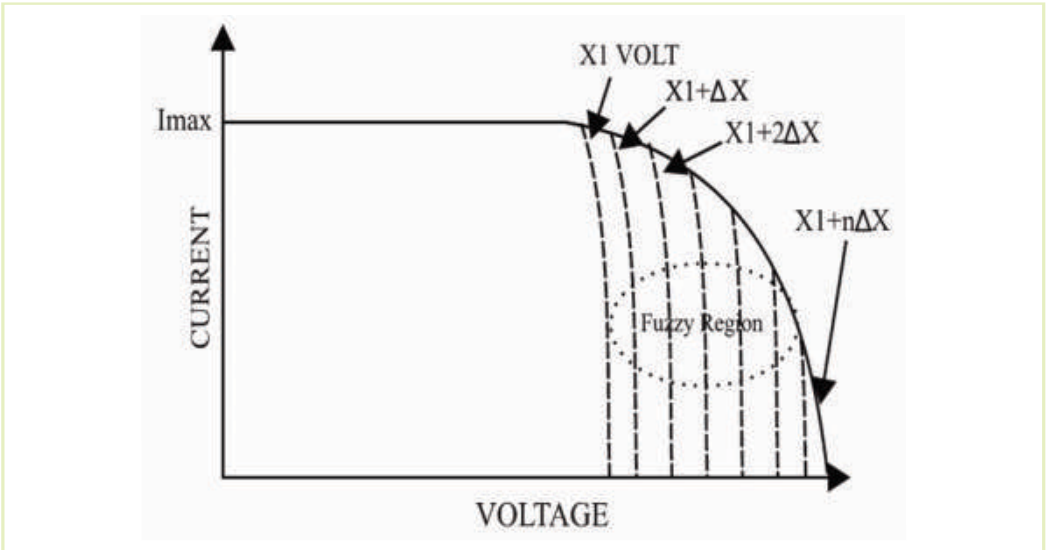
The FLC technology ensures the following:

- **Larger 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.



DET NORSKE VERITAS

CERTIFICATE OF CONFORMITY

CERTIFICATE NO. DNV-2005-OSL-LVD/EMC-0242
This Certificate consists of 3 pages

This is to confirm that the following equipment
ONLINE UPS
OFFLINE UPS
INVERTER

with type designations
(see overleaf)

manufactured by
SU-KAM POWER SYSTEMS LTD.,
196-C, UDYOG VIHAR, SECTOR-37, PHASE VI, GURGAON-122001 HARYANA , INDIA

are found to comply with
The essential health and safety requirements specified in Annex I of Council Directive 73/23/EEC, as amended and the essential protection requirements specified in Article 4 of Council Directive 89/336/EEC, as amended.

The products have been assessed with respect to the technical documentation as specified in point 3 of Annex IV of 73/23/EEC and to suitable standards referred to in Article 7(1)(a) of 89/336/EEC

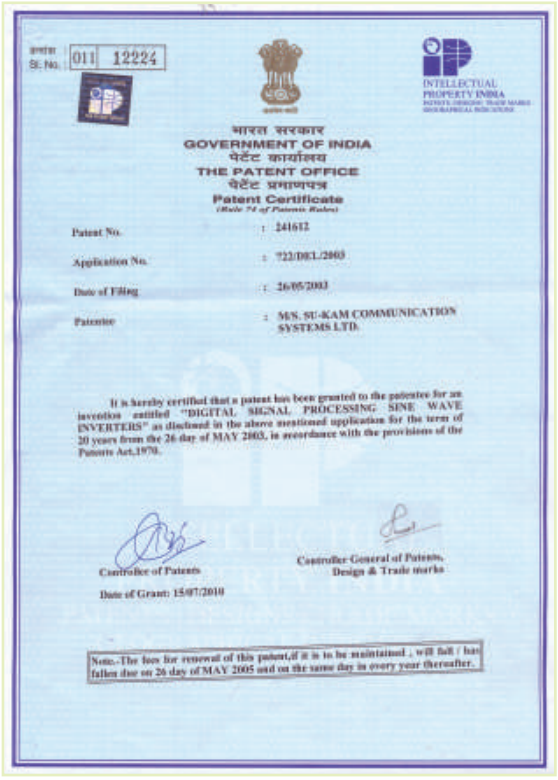
Further details of the products and conditions for certification are given overleaf.

Place and date
Høvik, 28th June 2005
for DET NORSKE VERITAS CERTIFICATION AS

Lise Gangeflar
Head of Section

Per Gulbrandsen / Huu Dung Dinh

CE Certificate



भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
पेटेंट प्रमाणपत्र
Patent Certificate

Patent No. : 241612

Application No. : 722/DEL/2003

Date of Filing : 26/05/2003

Patentee : M/S. SU-KAM COMMUNICATION SYSTEMS LTD.

It is hereby certified that a patent has been granted to the patentee for an invention entitled "DIGITAL SIGNAL PROCESSING SINE WAVE INVERTERS" as disclosed in the above mentioned application for the term of 20 years from the 26 day of MAY 2003, in accordance with the provisions of the Patents Act,1970.

Controller of Patents

Controller General of Patents, Design & Trade marks

Date of Grant: 15/07/2010

Note:-The fees for renewal of this patent,if it is to be maintained , will fall / has fallen due on 26 day of MAY 2005 and on the same day in every year thereafter.

Technology Patent

Government Of India
Copyright Office
Extract from the Register of Copyrights

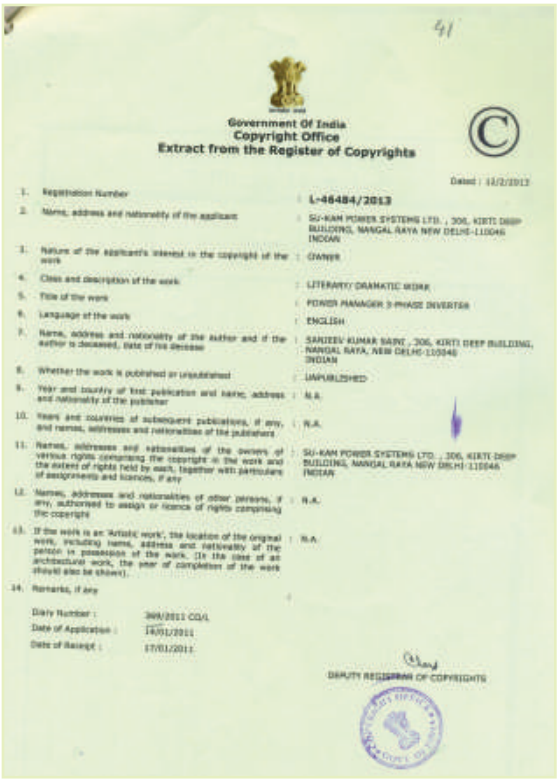
Dated : 15/3/2013

1.	Registration Number	L-47614/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	POWER DOC WEB -BASED REMOTE MONITORING APPLICATION
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 5491/2011-CO/L
Date of Application : 25/04/2011
Date of Receipt : 27/04/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

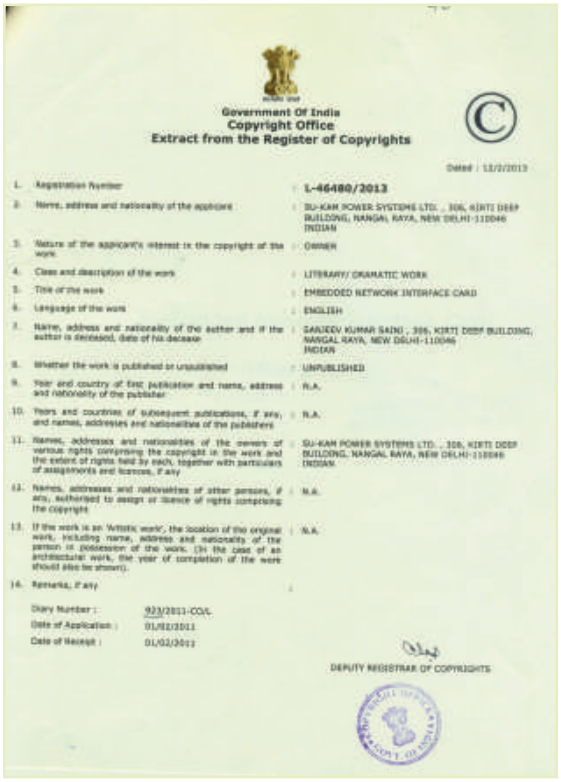
Dated : 12/2/2013

1.	Registration Number	L-46484/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	POWER MANAGER 3-PHASE INVERTER
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 369/2011-CO/L
Date of Application : 14/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 13/2/2013

1.	Registration Number	: L-46480/2013
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	: LITERARY/ DRAMATIC WORK
5.	Title of the work	: EMBEDDED NETWORK INTERFACE CARD
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, authorised to assign or licence 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).	: N.A.
14.	Remarks, if any	:

Diary Number : 923/2011-CO/L
Date of Application : 01/02/2011
Date of Receipt : 01/02/2013

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Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 13/06/2013

1.	Registration Number	: SW-7100/2013
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	: COMPUTER SOFTWARE WORK
5.	Title of the work	: DEMO SOFTWARE FOR 3 PHASE INVERTER
6.	Language of the work	: JAVA, MYSQL
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, authorised to assign or licence 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).	: N.A.
14.	Remarks, if any	:

Diary Number : 2983/2011-CO/SW
Date of Application : 14/03/2011
Date of Receipt : 17/03/2011

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Extract from the Register of Copyrights

Dated : 13/06/2013

1.	Registration Number	: SW-7102/2013
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	: COMPUTER SOFTWARE WORK
5.	Title of the work	: STATIC BY PASS SWITCH (SINGLE PHASE)
6.	Language of the work	: JAVA, MYSQL
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, authorised to assign or licence 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).	: N.A.
14.	Remarks, if any	:

Diary Number : 2983/2011-CO/SW
Date of Application : 17/03/2011
Date of Receipt : 17/03/2011

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Dated : 13/06/2013

1.	Registration Number	: SW-7104/2013
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	: COMPUTER SOFTWARE WORK
5.	Title of the work	: TELECOM BASIC SOFTWARE
6.	Language of the work	: C#, DOT NET, SQL SERVER
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, authorised to assign or licence 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).	: N.A.
14.	Remarks, if any	:

Diary Number : 2981/2011-CO/SW
Date of Application : 17/03/2011
Date of Receipt : 17/03/2011

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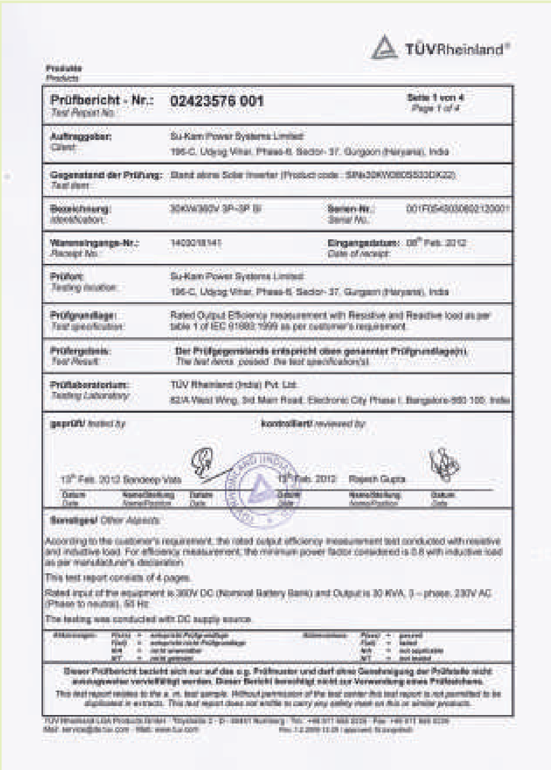

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Prüfbericht - Nr.: 02423576 001 — Seite 1 von 4 / Page 1 of 4
Test Report No.

Auftraggeber: Client:	Su-Kam Power Systems Limited, 195-C, Udyog Vihar, Phase-6, Sector- 37, Gurgaon (Haryana), India
Gegenstand der Prüfung: Test item:	Stand alone Solar Inverter (Product code : SINs30KW0805S33DK22)
Bezeichnung: Identification:	30KW/360V 3P-3P SI — **Serien-Nr.:** Serial No.: 001F0S4030080212000
Wareneingangs-Nr.: Receipt No.:	1403018141 — **Eingangsdatum:** Date of receipt: 08th Feb. 2012
Prüfort: Testing location:	Su-Kam Power Systems Limited, 195-C, Udyog Vihar, Phase-6, Sector- 37, Gurgaon (Haryana), India
Prüfgrundlage: Test specification:	Rated Output Efficiency measurement with Resistive and Reactive load as per table 1 of IEC 61683:1999 as per customer's requirement.
Prüfergebnis: Test Result:	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test items passed the test specification(s).
Prüflaboratorium: Testing Laboratory:	TÜV Rheinland (India) Pvt. Ltd. 82/A West Wing, 3rd Main Road, Electronic City Phase I, Bangalore-560 100, India

geprüft/ tested by — kontrolliert/ reviewed by

13th Feb. 2012 Sandeep Vats — 13th Feb. 2012 Rajesh Gupta

Datum / Date — Name/Stellung / Name/Position — Datum / Date

Sonstiges/ Other Aspects:

According to the customer's requirement, the rated output efficiency measurement test conducted with resistive and inductive load. For efficiency measurement, the minimum power factor considered is 0.8 with inductive load as per manufacturer's declaration.

This test report consists of 4 pages.

Rated input of the equipment is 360V DC (Nominal Battery Bank) and Output is 30 KVA, 3 – phase, 230V AC (Phase to neutral), 50 Hz

The testing was conducted with DC supply source.

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

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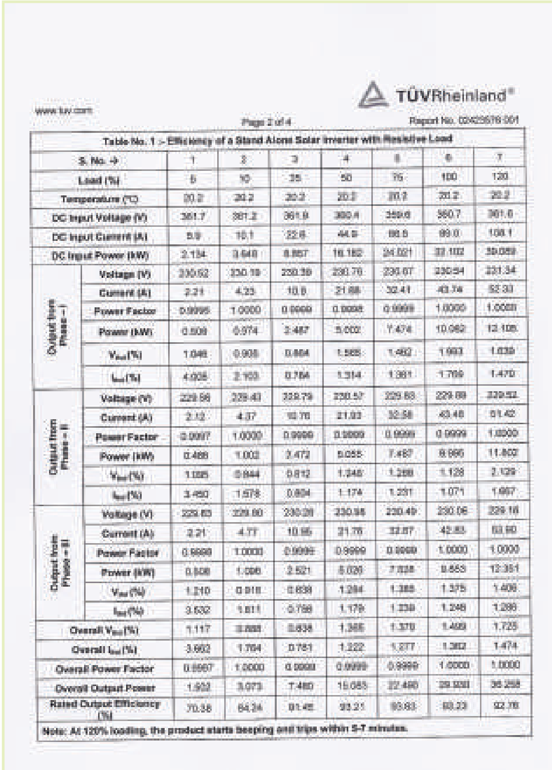

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Table No. 1 :- Efficiency of a Stand Alone Solar Inverter with Resistive Load

	S. No. →	1	2	3	4	5	6	7
	Load (%)	5	10	25	50	75	100	120
	Temperature (°C)	20.2	20.2	20.2	20.2	20.2	20.2	20.2
	DC Input Voltage (V)	361.7	361.2	361.9	360.4	359.6	360.7	361.6
	DC Input Current (A)	5.9	10.1	22.6	44.9	66.5	89.0	108.1
	DC Input Power (kW)	2.134	3.648	8.867	16.182	24.021	32.102	39.089
Output from Phase – I	Voltage (V)	230.52	230.19	230.39	230.76	230.67	230.54	231.34
	Current (A)	2.21	4.23	10.8	21.68	32.41	43.74	52.33
	Power Factor	0.9995	1.0000	0.9999	0.9998	0.9999	1.0000	1.0000
	Power (kW)	0.509	0.974	2.487	5.002	7.474	10.062	12.105
	V_{thd} (%)	1.046	0.908	0.864	1.565	1.462	1.993	1.639
	I_{thd} (%)	4.026	2.103	0.784	1.314	1.361	1.769	1.470
Output from Phase – II	Voltage (V)	229.56	229.43	229.79	230.57	229.63	229.69	229.52
	Current (A)	2.12	4.37	10.76	21.93	32.58	43.48	51.42
	Power Factor	0.9997	1.0000	0.9999	0.9999	0.9999	0.9999	1.0000
	Power (kW)	0.488	1.002	2.472	5.055	7.487	9.996	11.802
	V_{thd} (%)	1.095	0.844	0.812	1.246	1.268	1.128	2.129
	I_{thd} (%)	3.450	1.578	0.804	1.174	1.231	1.071	1.667
Output from Phase – III	Voltage (V)	229.83	229.80	230.28	230.98	230.49	230.06	229.16
	Current (A)	2.21	4.77	10.95	21.76	32.87	42.83	53.90
	Power Factor	0.9998	1.0000	0.9999	0.9999	0.9999	1.0000	1.0000
	Power (kW)	0.508	1.096	2.521	5.026	7.528	9.853	12.351
	V_{thd} (%)	1.210	0.918	0.838	1.284	1.385	1.375	1.406
	I_{thd} (%)	3.632	1.811	0.758	1.179	1.239	1.248	1.286
	Overall V_{thd} (%)	1.117	0.888	0.838	1.365	1.370	1.499	1.725
	Overall I_{thd} (%)	3.602	1.764	0.781	1.222	1.277	1.362	1.474
	Overall Power Factor	0.9997	1.0000	0.9999	0.9999	0.9999	1.0000	1.0000
	Overall Output Power	1.502	3.073	7.480	15.083	22.490	29.920	36.258
	Rated Output Efficiency (%)	70.38	84.24	91.45	93.21	93.63	93.23	92.76

Note: At 120% loading, the product starts beeping and trips within 5-7 minutes.

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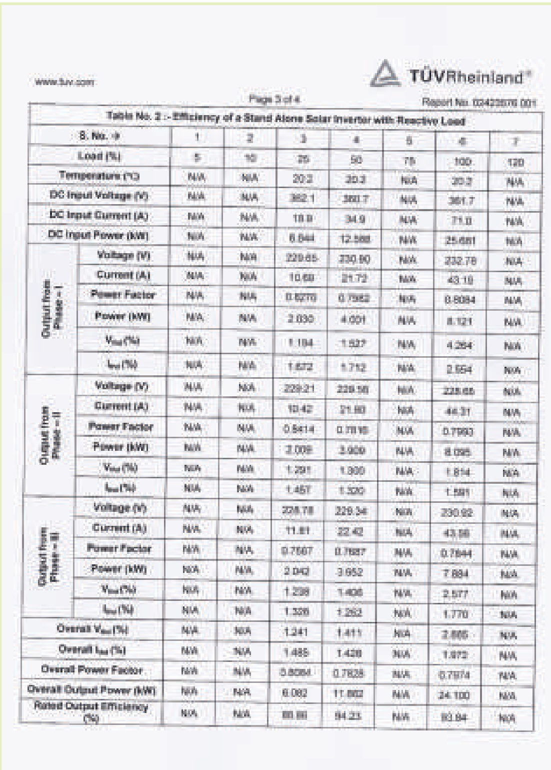

www.tuv.com — Page 3 of 4 — Report No. 02423576 001

Table No. 2 :- Efficiency of a Stand Alone Solar Inverter with Reactive Load

	S. No. →	1	2	3	4	5	6	7
	Load (%)	5	10	25	50	75	100	120
	Temperature (°C)	N/A	N/A	20.2	20.2	N/A	20.2	N/A
	DC Input Voltage (V)	N/A	N/A	362.1	360.7	N/A	361.7	N/A
	DC Input Current (A)	N/A	N/A	18.9	34.9	N/A	71.0	N/A
	DC Input Power (kW)	N/A	N/A	6.844	12.588	N/A	25.681	N/A
Output from Phase – I	Voltage (V)	N/A	N/A	229.65	230.90	N/A	232.78	N/A
	Current (A)	N/A	N/A	10.69	21.72	N/A	43.19	N/A
	Power Factor	N/A	N/A	0.8270	0.7982	N/A	0.8084	N/A
	Power (kW)	N/A	N/A	2.030	4.001	N/A	8.121	N/A
	V_{thd} (%)	N/A	N/A	1.194	1.527	N/A	4.264	N/A
	I_{thd} (%)	N/A	N/A	1.672	1.712	N/A	2.554	N/A
Output from Phase – II	Voltage (V)	N/A	N/A	229.21	229.58	N/A	228.65	N/A
	Current (A)	N/A	N/A	10.42	21.80	N/A	44.31	N/A
	Power Factor	N/A	N/A	0.8414	0.7816	N/A	0.7993	N/A
	Power (kW)	N/A	N/A	2.009	3.909	N/A	8.095	N/A
	V_{thd} (%)	N/A	N/A	1.291	1.300	N/A	1.814	N/A
	I_{thd} (%)	N/A	N/A	1.457	1.320	N/A	1.591	N/A
Output from Phase – III	Voltage (V)	N/A	N/A	228.78	229.34	N/A	230.92	N/A
	Current (A)	N/A	N/A	11.81	22.42	N/A	43.56	N/A
	Power Factor	N/A	N/A	0.7567	0.7687	N/A	0.7844	N/A
	Power (kW)	N/A	N/A	2.042	3.952	N/A	7.884	N/A
	V_{thd} (%)	N/A	N/A	1.238	1.406	N/A	2.577	N/A
	I_{thd} (%)	N/A	N/A	1.326	1.262	N/A	1.770	N/A
	Overall V_{thd} (%)	N/A	N/A	1.241	1.411	N/A	2.885	N/A
	Overall I_{thd} (%)	N/A	N/A	1.485	1.428	N/A	1.972	N/A
	Overall Power Factor	N/A	N/A	0.8084	0.7828	N/A	0.7974	N/A
	Overall Output Power (kW)	N/A	N/A	6.082	11.862	N/A	24.100	N/A
	Rated Output Efficiency (%)	N/A	N/A	88.86	94.23	N/A	93.84	N/A

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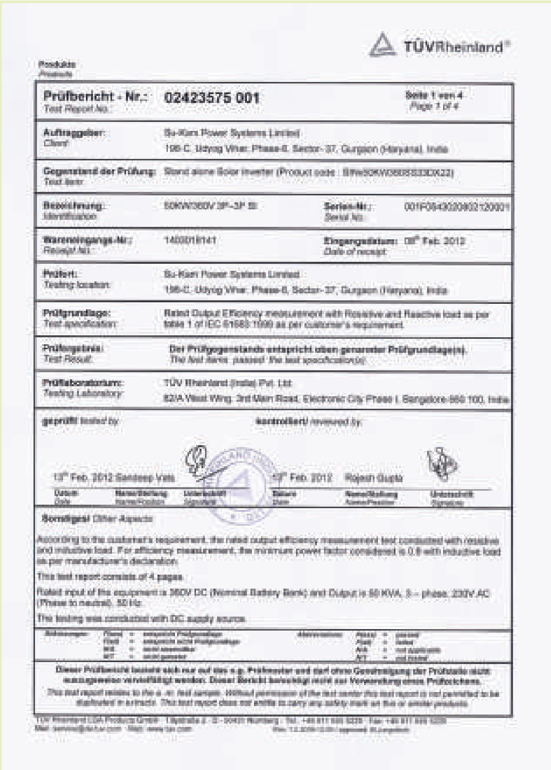
Test Report Certificate - Page 4



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Prüfbericht - Nr.: *Test Report No.*	**02423575 001**		**Seite 1 von 4** *Page 1 of 4*
Auftraggeber: *Client*	Su-Kam Power Systems Limited 198-C, Udyog Vihar, Phase-6, Sector- 37, Gurgaon (Haryana), India		
Gegenstand der Prüfung: *Test item*	Stand alone Solar Inverter (Product code : SIN50KW360SS33DX22)		
Bezeichnung: *Identification*	50KW/360V 3P-3P SI	**Serien-Nr.:** *Serial No.*	001F0943020802120001
Wareneingangs-Nr.: *Receipt No.*	1400018141	**Eingangsdatum:** *Date of receipt*	08th Feb. 2012
Prüfort: *Testing location*	Su-Kam Power Systems Limited 198-C, Udyog Vihar, Phase-6, Sector- 37, Gurgaon (Haryana), India		
Prüfgrundlage: *Test specification*	Rated Output Efficiency measurement with Resistive and Reactive load as per table 1 of IEC 61683:1999 as per customer's requirement.		
Prüfergebnis: *Test Result*	**Der Prüfgegenstands entspricht oben genannter Prüfgrundlage(n).** *The test items passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory*	TÜV Rheinland (India) Pvt. Ltd. 82/A West Wing, 3rd Main Road, Electronic City Phase I, Bangalore-560 100, India		

geprüft/ *tested by*: 13th Feb. 2012 Sandeep Vats — Datum/*Date*, Name/Stellung *Name/Position*, Unterschrift/*Signature*

kontrolliert/ *reviewed by*: 13th Feb. 2012 Rajesh Gupta — Datum/*Date*, Name/Stellung *Name/Position*, Unterschrift/*Signature*

Sonstiges/ *Other Aspects*

According to the customer's requirement, the rated output efficiency measurement test conducted with resistive and inductive load. For efficiency measurement, the minimum power factor considered is 0.8 with inductive load as per manufacturer's declaration.

This test report consists of 4 pages.

Rated input of the equipment is 360V DC (Nominal Battery Bank) and Output is 50 KVA, 3 – phase, 230V AC (Phase to neutral), 50 Hz.

The testing was conducted with DC supply source.

Abkürzungen: P(ass) = entspricht Prüfgrundlage; F(ail) = entspricht nicht Prüfgrundlage; N/A = nicht anwendbar; N/T = nicht getestet
Abbreviations: P(ass) = passed; F(ail) = failed; N/A = not applicable; N/T = not tested

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
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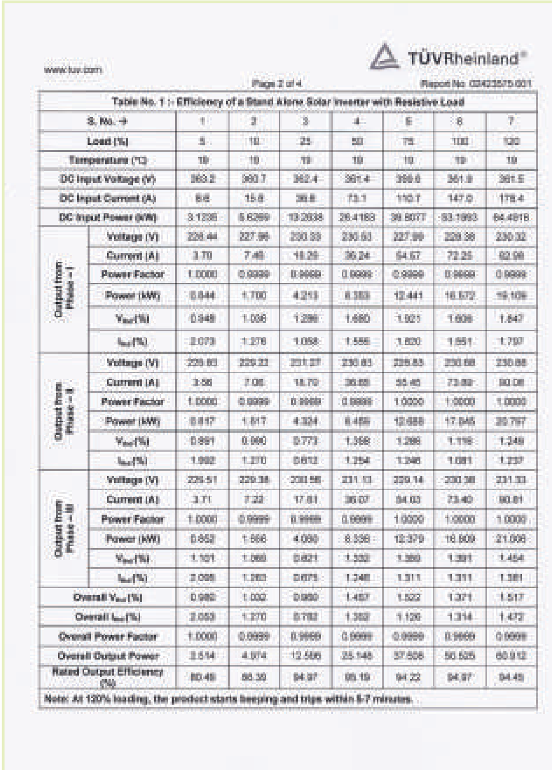

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Page 2 of 4 — Report No. 02423575 001

Table No. 1 :- Efficiency of a Stand Alone Solar Inverter with Resistive Load

S. No. →		1	2	3	4	5	6	7
Load (%)		5	10	25	50	75	100	120
Temperature (°C)		19	19	19	19	19	19	19
DC Input Voltage (V)		363.2	360.7	362.4	361.4	359.6	361.9	361.5
DC Input Current (A)		8.6	15.6	36.6	73.1	110.7	147.0	178.4
DC Input Power (kW)		3.1236	5.6269	13.2638	26.4183	39.8077	53.1993	64.4916
Output from Phase – I	Voltage (V)	228.44	227.96	230.33	230.63	227.99	229.38	230.32
	Current (A)	3.70	7.46	18.29	36.24	54.57	72.25	82.98
	Power Factor	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
	Power (kW)	0.844	1.700	4.213	8.353	12.441	16.572	19.109
	V_{thd}(%)	0.948	1.036	1.296	1.680	1.921	1.606	1.847
	I_{thd}(%)	2.073	1.276	1.058	1.556	1.620	1.551	1.797
Output from Phase – II	Voltage (V)	229.83	229.22	231.27	230.83	228.83	230.68	230.88
	Current (A)	3.56	7.06	18.70	36.65	55.45	73.89	90.06
	Power Factor	1.0000	0.9999	0.9999	0.9999	1.0000	1.0000	1.0000
	Power (kW)	0.817	1.617	4.324	8.459	12.688	17.045	20.797
	V_{thd}(%)	0.891	0.990	0.773	1.368	1.288	1.116	1.249
	I_{thd}(%)	1.992	1.270	0.612	1.254	1.246	1.081	1.237
Output from Phase – III	Voltage (V)	229.51	229.38	230.56	231.13	229.14	230.38	231.33
	Current (A)	3.71	7.22	17.61	36.07	54.03	73.40	90.81
	Power Factor	1.0000	0.9999	0.9999	0.9999	1.0000	1.0000	1.0000
	Power (kW)	0.852	1.656	4.060	8.336	12.379	16.909	21.006
	V_{thd}(%)	1.101	1.069	0.821	1.332	1.369	1.391	1.454
	I_{thd}(%)	2.095	1.263	0.675	1.246	1.311	1.311	1.381
Overall V_{thd} (%)		0.980	1.032	0.960	1.457	1.522	1.371	1.517
Overall I_{thd} (%)		2.053	1.270	0.782	1.352	1.126	1.314	1.472
Overall Power Factor		1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
Overall Output Power		2.514	4.974	12.596	25.148	37.508	50.525	60.912
Rated Output Efficiency (%)		80.49	88.39	94.97	95.19	94.22	94.97	94.45

Note: At 120% loading, the product starts beeping and trips within 5-7 minutes.

Test Report Certificate - Page 2

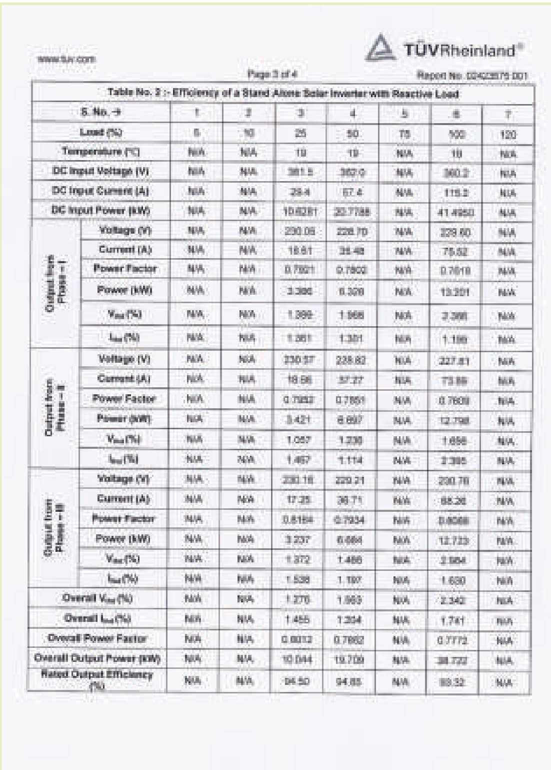

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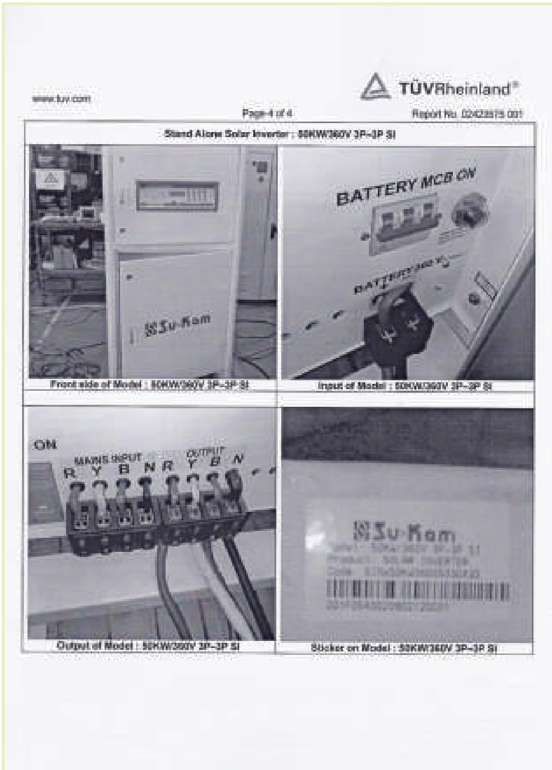
Table No. 2 :- Efficiency of a Stand Alone Solar Inverter with Reactive Load

S. No. →		1	2	3	4	5	6	7
Load (%)		5	10	25	50	75	100	120
Temperature (°C)		N/A	N/A	19	19	N/A	19	N/A
DC Input Voltage (V)		N/A	N/A	361.5	362.0	N/A	360.2	N/A
DC Input Current (A)		N/A	N/A	29.4	57.4	N/A	115.2	N/A
DC Input Power (kW)		N/A	N/A	10.6281	20.7788	N/A	41.4950	N/A
Output from Phase – I	Voltage (V)	N/A	N/A	230.06	228.70	N/A	229.60	N/A
	Current (A)	N/A	N/A	18.61	35.48	N/A	75.52	N/A
	Power Factor	N/A	N/A	0.7921	0.7802	N/A	0.7618	N/A
	Power (kW)	N/A	N/A	3.386	6.328	N/A	13.201	N/A
	V_{thd} (%)	N/A	N/A	1.399	1.966	N/A	2.366	N/A
	I_{thd} (%)	N/A	N/A	1.361	1.301	N/A	1.199	N/A
Output from Phase – II	Voltage (V)	N/A	N/A	230.57	228.82	N/A	227.81	N/A
	Current (A)	N/A	N/A	18.56	37.27	N/A	73.69	N/A
	Power Factor	N/A	N/A	0.7932	0.7851	N/A	0.7609	N/A
	Power (kW)	N/A	N/A	3.421	6.697	N/A	12.798	N/A
	V_{thd} (%)	N/A	N/A	1.057	1.230	N/A	1.656	N/A
	I_{thd} (%)	N/A	N/A	1.467	1.114	N/A	2.395	N/A
Output from Phase – III	Voltage (V)	N/A	N/A	230.16	229.21	N/A	230.78	N/A
	Current (A)	N/A	N/A	17.25	36.71	N/A	68.26	N/A
	Power Factor	N/A	N/A	0.8164	0.7934	N/A	0.8088	N/A
	Power (kW)	N/A	N/A	3.237	6.684	N/A	12.723	N/A
	V_{thd} (%)	N/A	N/A	1.372	1.486	N/A	2.984	N/A
	I_{thd} (%)	N/A	N/A	1.538	1.197	N/A	1.630	N/A
Overall V_{thd} (%)		N/A	N/A	1.276	1.563	N/A	2.342	N/A
Overall I_{thd} (%)		N/A	N/A	1.455	1.204	N/A	1.741	N/A
Overall Power Factor		N/A	N/A	0.8012	0.7862	N/A	0.7772	N/A
Overall Output Power (kW)		N/A	N/A	10.044	19.709	N/A	38.722	N/A
Rated Output Efficiency (%)		N/A	N/A	94.50	94.85	N/A	93.32	N/A

Test Report Certificate - Page 3



Test Report Certificate - Page 4

POWER ACCESSORIES

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
- De-gas Chamber
- Single Point Multi Feeder
- Clampless Tube

Benefits

- Cost Savings
- Safety From Burn
- Extended Battery Life & Performance
- Time Saving Convenience
- Install It And Forget It

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.

Stackable Trolley

Su-Kam Stackable Trolley is truly versatile in character.

- Is extremely lightweight and easy to install.
- Can be assembled and rearranged in any space.
- Is termite & temperature resistant.
- Is 100% waterproof. No absorption of moisture during the monsoon.
- Is mobile, can be shifted easily.
- Is available in soothing pastel shades.
- Stacks up neatly taking up less space.

SINE WAVE LINE INTERACTIVE UPS

1 Phase In - 1 Phase Out

600VA to 3000VA

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, these ensure full safety of highly sophisticated equipment. They protect business centres against sudden blackouts and variations in the main power supply which may lead to malfunction and severe data losses.

Sine UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

SINE UPS SERIES - 600VA/12V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

Applications

- Personal Computer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	600VA
BATTERY	12V (Internal)
LOAD	1 PC
RECOMMENDED BATTERY	7.2Ah
BACKUP TIME	>10 Min.

Installation Diagram

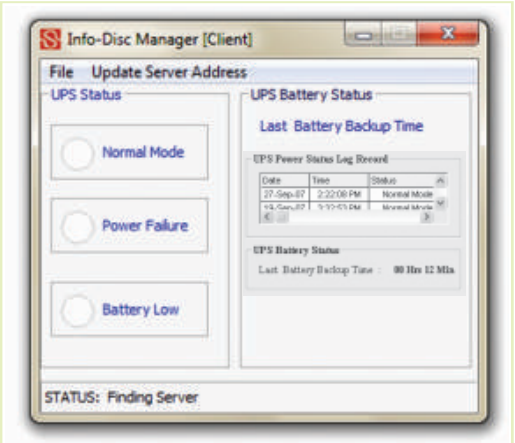
Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	600VA / 12V	
INPUT		
Voltage Window	145 VAC – 295 VAC ± 5V	
Frequency	Cut at Low Freq 42 Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	200 VAC – 245 VAC	
THD		
Under Linear Load	< 3.0%	
Under Non-Linear 0.6 Power Factor Load	< 10.0%	
Transfer Time	Typically 8msec	
BATTERY		
Type / Voltage	Lead – acid SMF , 12 V (7.2AH)	
Charging Current	1A±0.1A (factory settable, to be set 0.7A to 1.2A at production)	
Low Battery Voltage Warning	11V ± 0.2V	
Low Cut Battery Voltage	10.6V ± 0.2V	
Battery Top Charging Voltage	13.9V ± 0.2V	
PROTECTION		
Over Load / Short Ckt.	Yes	
Battery deep Discharge, over charge Protection	Yes	
No Load Shutdown	Yes	
Cold Start	Yes	
Communication Port	Yes (Optional)	
LED / ALARM	LED	Alarm
Normal city power	Green Lighting	No
Back up mode	Red	Yes (beep in every 30 second)
O/P/off	Green (slow flashing)	No
Low Battery	Red (slow flashing)	Yes (Slow beep)
Overload Circuit	Red (flashing as per load)	Yes (beep in case of overload)
Short Circuit	System off permanently	
No Load Condition	Red	Yes (slow beep)

Specifications are subject to change without prior notice.



PRODUCT USP

Monitoring Software

The Su-Kam Digital Line Interactive UPS RS232 monitoring software "Info Disc Manager" is compatible with almost all popular operating systems with best reliability. An easy to install auto run software CD and DB-9 Communication connector cable is to be connected to facilitate convenient interfacing of PC with UPS.

On first start, the software shows a registration form which is mandatory to fill for proper functioning of the software. Once registration is completed, the software will ask user to select the communication port for communication with the UPS. The port once selected will become the default and the software will start automatically on that port every time. In case user wants to change the port which is once made default then he must change it in less than 30 seconds when the port form pops up after the beginning of the software.

Once installed it will start automatically after completion of operating system booting and continuously monitor the system by showing the icon in the status bar of desktop.

Sine UPS Series

1 Phase In - 1 Phase Out

In-built Mobile Charger

RS232 Communication Port

SINE UPS SERIES - 800VA/24V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	800VA
BATTERY	24V (Internal)
LOAD	1 PC + 1 Printer
RECOMMENDED BATTERY	7.2Ah x 2 Battery
BACKUP TIME	>20 Min.

Installation Diagram

Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	800VA / 12V (Internal Battery)	
INPUT		
Voltage Window	145 VAC – 295 VAC ± 5V	
Frequency	Cut at Low Freq 42 Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	200 VAC – 245 VAC	
THD		
Under Linear Load	< 4.0%	
Under Non-Linear 0.6 Power Factor Load	< 13.0%	
Transfer Time	Typically 8msec	
BATTERY		
Type / Voltage	Lead – acid SMF, 12 V (7.2 AH)	
Charging Current	1A	
PROTECTION		
Over Load / Short	Yes	
Battery deep Discharge, over charge Protection	Yes	
No Load Shutdown	Yes	
Cold Start	Yes	
Communication Port	Yes (Optional)	
Mobile Charger	Yes (Optional)	
LED / ALARM	LED	Alarm
Normal city power	White Lighting	No
Back up mode	Red	Yes (beep in every 30 second)
O/P On/off	Yellow	Yes
Low Battery	Red (slow flashing)	Yes (fast beep)
Overload Circuit	Red (flashing as per load)	Yes (beep in case of overload)
Short Circuit	System off permanently	
No Load Shutdown	Red	Yes (slow beep)

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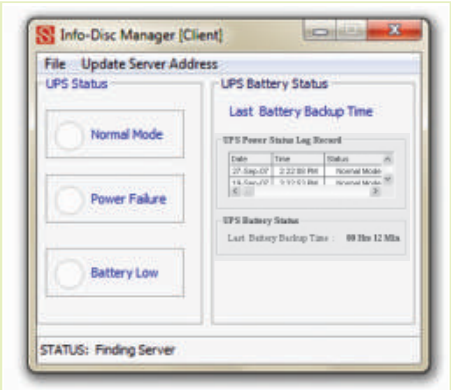
PRODUCT USP



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Inbuilt Mobile Charger

Line Interactive UPS System has an inbuilt mobile charger with multi plug option. This enables the user to charge his mobile phone through the pure DC charger. This particular feature enables the user to derive good quality of power output which increases battery life of his mobile phone. It also has the added benefit of helping the user to save on the extra electricity consumed for mobile charging from other sources.

Sine UPS Series

1 Phase In - 1 Phase Out

Sine ups

In-built Mobile Charger

RS232 Communication Port

SINE UPS SERIES - 800VA/12V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	800VA
BATTERY	12V (External)
LOAD	1 PC + 1 Printer
RECOMMENDED BATTERY	65Ah - 100Ah
BACKUP TIME on 65Ah Battery	>1 Hr.
BACKUP TIME on 100Ah Battery	>2 Hrs.

Installation Diagram

Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	800VA / 12V (External Battery)	
INPUT		
Voltage Window	145 VAC – 295 VAC ± 5V	
Frequency	Cut at Low Freq 42 Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	200 VAC – 245 VAC	
THD		
Under Linear Load	< 4.0%	
Under Non-Linear 0.6 Power Factor Load	< 13.0%	
Transfer Time	Typically 8msec	
BATTERY		
Type / Voltage	Lead – acid SMF , 12 V (65-88AH)	
Charging Current	6A±1A (factory settable, to be set 6A at production)	
Low Battery Voltage Warning	10.7V ± 0.2V	
Low Cut Battery Voltage	10.2V ± 0.2V	
Battery Top Charging Voltage	13.8V ± 0.2V	
PROTECTION		
Over Load / Short	Yes	
Battery deep Discharge, over charge Protection	Yes	
No Load Shutdown	Yes	
Cold Start	Yes	
Communication Port	Yes (Optional)	
Mobile Charger	Yes (Optional)	
LED / ALARM	LED	Alarm
Normal city power	White Lighting	No
Back up mode	Red	Yes (beep in every 30 second)
O/P On/off	Yellow	Yes
Low Battery	Red (slow flashing)	Yes (fast beep)
Overload Circuit	Red (flashing as per load)	Yes (beep in case of overload)
Short Circuit	System off permanently	
No Load Shutdown	Red	Yes (slow beep)

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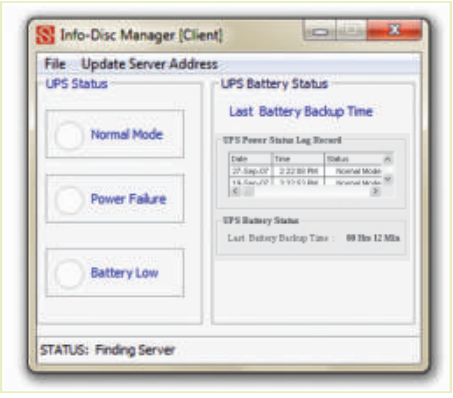
PRODUCT USP



Monitoring Software

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Inbuilt Mobile Charger

Line Interactive UPS System has an inbuilt mobile charger with multi plug option. This enables the user to charge his mobile phone through the pure DC charger. This particular feature enables the user to derive good quality of power output which increases battery life of his mobile phone. It also has the added benefit of helping the user to save on the extra electricity consumed for mobile charging from other sources.

Sine UPS Series

1 Phase In - 1 Phase Out

In-built Mobile Charger

RS232 Communication Port

SINE UPS SERIES - 1000VA/24V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	1000VA
BATTERY	24V (Internal)
LOAD	2 PC + 1 Printer
RECOMMENDED BATTERY	7.2Ah x 2 Battery
BACKUP TIME	>10 Min.

Installation Diagram

Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	1000VA/24V (Internal Battery)	
INPUT		
Voltage Window	145 VAC – 295 VAC ± 5V	
Frequency	Cut at Low Freq 42 Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	200 VAC – 245 VAC	
THD		
Under Linear Load	< 5.0%	
Under Non-Linear 0.6 Power Factor Load	< 15.0%	
Transfer Time	Typically 5msec	
BATTERY		
Type / Voltage	Lead – acid SMF , 24 V (2 x 12 V, 7.2 AH)	
Charging Current	0.6 to 1.2 A (factory settable, to be set 0.9A at production)	
Low Battery Voltage Warning	21.7V ± 0.4V	
Low Cut Battery Voltage	20.8V ± 0.4V	
Battery Top Charging Voltage	27.4V ± 0.4V	
PROTECTION		
Over Load / Short	Yes	
Battery deep Discharge, over charge Protection	Yes	
No Load Shutdown	Yes	
Cold Start	Yes	
Communication Port	Yes (Optional)	
Mobile Charger	Yes (Optional)	
LED / ALARM	LED	Alarm
Normal city power	Green Lighting	No
Back up mode	Red	Yes (beep in every 30 second)
O/P On/off	Yellow	Yes
Low Battery	Red (slow flashing)	Yes (fast beep)
Overload Circuit	Red (flashing as per load)	Yes (beep in case of overload)
Short Circuit	System off permanently	
No Load Shutdown	Red	Yes (slow beep)

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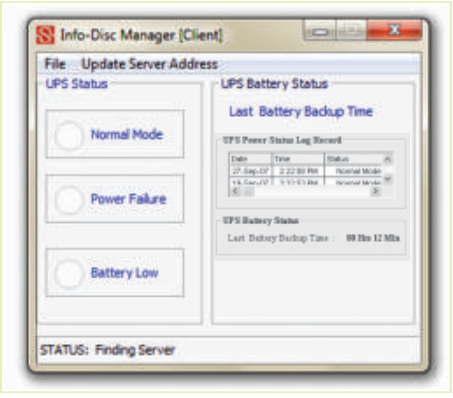
PRODUCT USP



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Sine UPS Series

1 Phase In - 1 Phase Out

Sine ups

In-built Mobile Charger

RS232 Communication Port

SINE UPS SERIES - 1000VA/24V (Long Backup)

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	1000VA
BATTERY	24V (External)
LOAD	2 PC + 1 Printer
RECOMMENDED BATTERY	65Ah - 100Ah x 2 Batteries
BACKUP TIME on 65Ah Battery	>1 Hr.
BACKUP TIME on 100Ah Battery	>2 Hrs.

Installation Diagram

Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	1000VA/24V (External Battery)	
INPUT		
Voltage Window	145 VAC – 295 VAC ± 5V	
Frequency	Cut at Low Freq 42 Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	200 VAC – 245 VAC	
THD		
Under Linear Load	< 4.0%	
Under Non-Linear 0.6 Power Factor Load	< 10.0%	
Transfer Time	Typically 8msec	
BATTERY		
Type / Voltage	Lead – acid SMF , 24 V (2 x 12 V, SMF 40AH-100AH, LA 65AH-100AH)	
Charging Current	6A±1A	
Low Battery Voltage Warning	21.7V ± 0.4V	
Low Cut Battery Voltage	20.8V ± 0.4V	
Battery Top Charging Voltage	27.4V ± 0.4V	
PROTECTION		
Over Load / Short	Yes	
Battery deep Discharge, over charge Protection	Yes	
No Load Shutdown	Yes	
Cold Start	Yes	
Communication Port	Yes (Optional)	
Mobile Charger	Yes (Optional)	
LED / ALARM	LED	Alarm
Normal city power	White Lighting	No
Back up mode	Red	Yes (beep in every 30 second)
O/P On/off	Yellow	Yes
Low Battery	Red (slow flashing)	Yes (fast beep)
Overload Circuit	Red (flashing as per load)	Yes (beep in case of overload)
Short Circuit	System off permanently	
No Load Shutdown	Red	Yes (slow beep)

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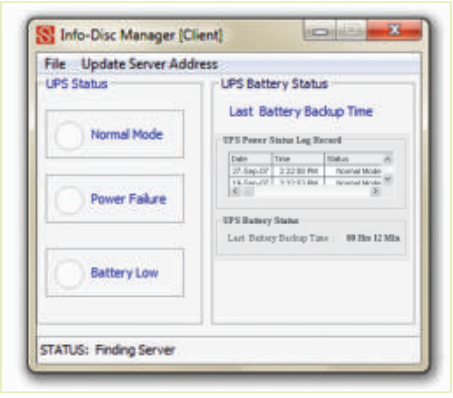
PRODUCT USP



Monitoring Software

The Su-Kam Digital Line Interactive UPS RS232 monitoring software "Info Disc Manager" is compatible with almost all popular operating systems with best reliability. An easy to install auto run software CD and DB-9 Communication connector cable is to be connected to facilitate convenient interfacing of PC with UPS.

On first start, the software shows a registration form which is mandatory to fill for proper functioning of the software. Once registration is completed, the software will ask user to select the communication port for communication with the UPS. The port once selected will become the default and the software will start automatically on that port every time. In case user wants to change the port which is once made default then he must change it in less than 30 seconds when the port form pops up after the beginning of the software.

Once installed it will start automatically after completion of operating system booting and continuously monitor the system by showing the icon in the status bar of desktop.

Inbuilt Mobile Charger

Line Interactive UPS System has an inbuilt mobile charger with multi plug option. This enables the user to charge his mobile phone through the pure DC charger. This particular feature enables the user to derive good quality of power output which increases battery life of his mobile phone. It also has the added benefit of helping the user to save on the extra electricity consumed for mobile charging from other sources.

Sine UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

SINE UPS SERIES - 2000VA/48V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

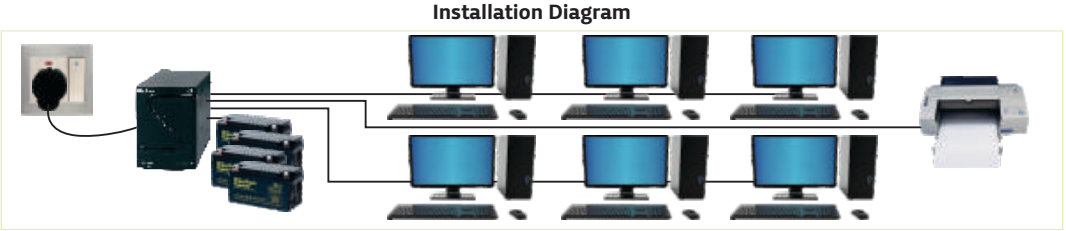
Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	2000VA
BATTERY	48V (External)
LOAD	6 PC + 1 Printer
RECOMMENDED BATTERY	65Ah - 100Ah x 4 Batteries
BACKUP TIME on 65Ah Battery	>1 Hr.
BACKUP TIME on 100Ah Battery	>1 Hr. 30 Mins.

Installation Diagram



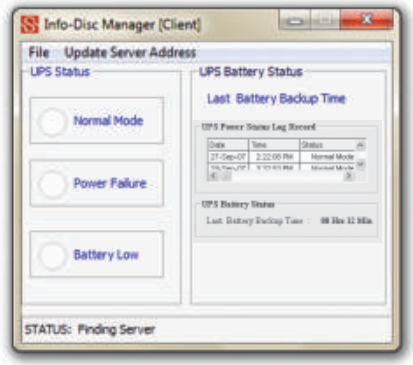
Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	2000VA/48V (External Battery)	
INPUT		
Voltage Window	150 VAC – 295 VAC ± 5V	
Frequency	42Hz ± 1Hz	
OUTPUT MAINS MODE		
Voltage Window	195 VAC – 255 VAC	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Pure Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	190 VAC – 240 VAC	
Transfer Time	Typically 8msec	
BATTERY		
Type / Voltage	Lead – acid SMF, 48 V (4 x 12 V, SMF 40AH-100AH, LA 65AH-100AH)	
Charging Current (Bulk Mode)	6A ± 1A	
Charging Current (Float Mode)	0.5A ± 0.5A	
Battery Low Warning	41.8V ± 0.4V	
Battery Low Cut	41.0V ± 0.4V	
Battery High Cut	54.8V ± 0.4V	
PROTECTION		
Over Load / Short Circuit	Fuse & Current limited for Battery mode. Fuse protection for mains mode.	
Battery deep Discharge, over charge Protection	Yes	
Efficiency	> 80% at resistive load	
THD	< 5% at linear load	
No Load Shutdown	Yes (Within 3 minutes)	
Cold Start	It enables to active UPS without utility power	
Communication Port	Optional	
LED BAR, LED / ALARM	Load Bar	Battery Bar
	Overload (Red)	Charged (Green)
	100% (Green)	80% (Green)
	75% (Green)	50% (Green)
	50% (Green)	30% (Green)
	25% (Green)	Low (Red)
	Load	(+ -) Battery
	LED	Alarm
Normal city power	Green Lighting	No beep
Back up mode	Red	Yes
O/P Off	Orange	No beep
O/P Off but battery charging	Green + Orange blinking	No beep
with normal city power		
Low Battery warning	Only Red LED of Battery Bar will glow	B------(continuous fast beep)
Overload	Red LED will glow with 25%-100% load bar LEDs	B---B----(depends on %load)
Short Circuit	System will permanently shut off after short circuit.	
No Load Shutdown		B—B—B--(1 beep/3sec)

Specifications are subject to change without prior notice.



PRODUCT USP

Monitoring Software

The Su-Kam Digital Line Interactive UPS RS232 monitoring software "Info Disc Manager" is compatible with almost all popular operating systems with best reliability. An easy to install auto run software CD and DB-9 Communication connector cable is to be connected to facilitate convenient interfacing of PC with UPS.

On first start, the software shows a registration form which is mandatory to fill for proper functioning of the software. Once registration is completed, the software will ask user to select the communication port for communication with the UPS. The port once selected will become the default and the software will start automatically on that port every time. In case user wants to change the port which is once made default then he must change it in less than 30 seconds when the port form pops up after the beginning of the software.

Once installed it will start automatically after completion of operating system booting and continuously monitor the system by showing the icon in the status bar of desktop.

Sine UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

SINE UPS SERIES - 3000VA/48V

Designed to protect your PC and Peripherals

Su-Kam's Line-interactive UPS Systems offer surge protection and battery back-up while regulating the AC power using one converter. Based on Micro Controller/Digital Signal Controller technology, it ensures full safety of highly sophisticated equipment.

A Line Interactive UPS is the simplest and most cost effective way of coping with disturbances i.e. sudden blackouts, variations in main power supply.

Acting as an interface between the mains and the loads, the Line Interactive UPS guarantees continuity and quality of electrical power supplied to the loads.

Principle: Line interactive UPS from the Su-Kam product stable is a low cost UPS that meets the need of power back up with minimal changeover time for IT appliances and computers.

Product Features

- Micro Controller based PWM technology using MOSFETs
- Digital flash memory
- Software controlled Auto Self - Test
- A convenient no load shutdown at battery mode
- Pure Sine wave output
- Change over with Phase synchronisation
- An extra wide input voltage range
- Inbuilt SMPS based charger with automatic power factor correction
- Cold start at full load
- Software controlled double protection for Overload and short circuit
- RS- 232 interface for auto shutdown

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge and over charge protection

Displays

- User friendly LED display & Audible alarms

Operation

- Single operation master switch
- Automatic circuit breaker recovery

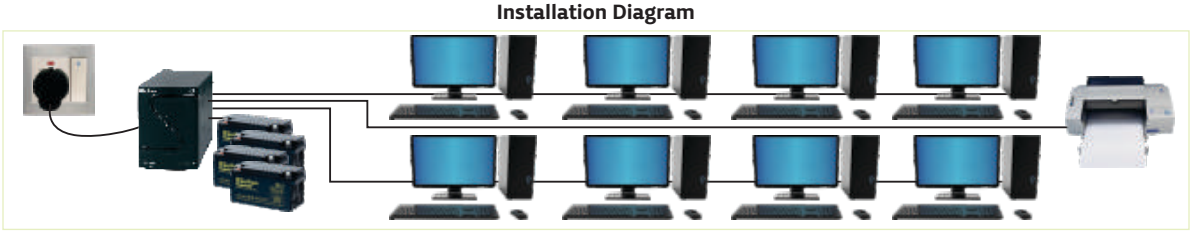
Applications

- Personal Computer & Printer
- POS (Point of Sale) Terminals
- Security system
- Fax machine
- Modem

LOAD & BACKUP CHART

CAPACITY	3000VA
BATTERY	48V (External)
LOAD	8 PC + 1 Printer
RECOMMENDED BATTERY	65Ah - 100Ah x 4 Batteries
BACKUP TIME on 65Ah Battery	>40 Mins.
BACKUP TIME on 100Ah Battery	>1 Hr. 10 Mins.

Installation Diagram



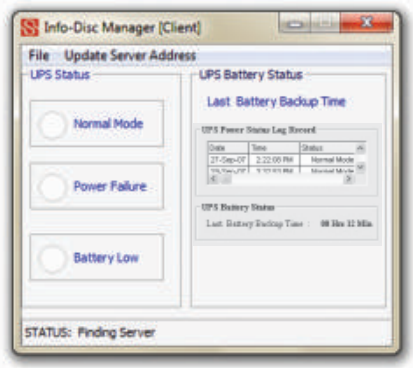
Sine UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	3000VA/48V (External Battery)	
INPUT		
Voltage Window	160VAC – 290 VAC ± 5V	
Frequency	47 Hz- 53 Hz	
OUTPUT MAINS MODE		
Voltage Window	200 VAC – 255 VAC ± 5V	
Wave Form	Same as Input	
Frequency	Same as Input	
OUTPUT INVERTER MODE		
Wave Form	Pure Sine Wave	
Frequency	50 ± 0.2 Hz	
Regulation	230 VAC ± 5%	
Transfer Time	Typically 8 msec	
BATTERY		
Type / Voltage	Lead – acid SMF , 48 V (4 x 12 V, SMF 40AH-100AH, LA 65AH-100AH)	
Charging Current (Bulk Mode)	6A ± 1A	
Charging Current (Float Mode)	0.5A ± 0.2A	
Battery Low Warning	41.2V ± 0.4V	
Battery Low Cut	40.4V ± 0.4V	
Battery High Cut	54.8V ± 0.4V	
PROTECTION		
Over Load / Short Circuit	Current limited for Battery mode.	
MCB protection for mains mode	Battery deep Discharge, over charge Protection	Yes, MCB protection for reverse battery .
Efficiency	85%	
THD	12% on Pc Load	
No Load Shutdown	Yes (Within 3 minutes)	
Cold Start	It enables to active UPS without utility power	
Communication Port	Optional	
LED BAR, LED / ALARM	Load Bar	Battery Bar
	Overload (Red)	Charged (Green)
	100% (Green)	80% (Green)
	75% (Green)	50% (Green)
	50% (Green)	30% (Green)
	25% (Green)	Low (Red)
	Load	(+ -) Battery
	LED	Alarm
Normal city power	Green Lighting	No beep
Back up mode	Red	No beep
O/P Off	Orange	No beep
O/P Off but battery charging	Green + Orange blinking	No beep
with normal city power		
Low Battery warning	Only Red LED of Battery Bar will glow	B------(continuous beep)
Overload / Short	Red LED will glow with 25%-100% load bar LEDs	B---B----(depends on %load)
No Load Shutdown	B--B—B--(2 beep/sec)	

Specifications are subject to change without prior notice.



PRODUCT USP

Monitoring Software

The Su-Kam Digital Line Interactive UPS RS232 monitoring software "Info Disc Manager" is compatible with almost all popular operating systems with best reliability. An easy to install auto run software CD and DB-9 Communication connector cable is to be connected to facilitate convenient interfacing of PC with UPS.

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Once installed it will start automatically after completion of operating system booting and continuously monitor the system by showing the icon in the status bar of desktop.

TECHNOLOGY ADVANTAGES

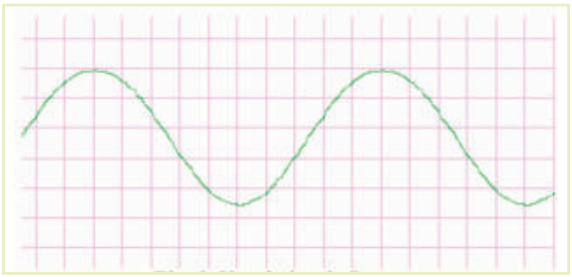
SINE WAVE TECHNOLOGY

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.

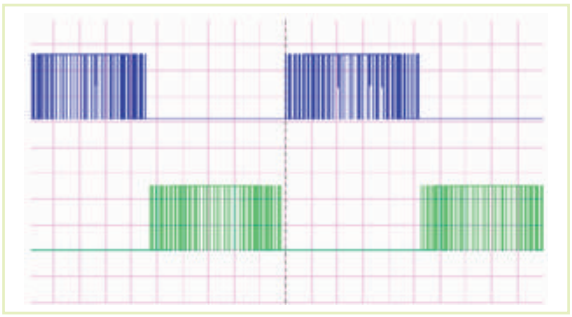
Available sine wave UPSs are very expensive and by examining the output wave, it is observed that it is not of good quality. Quality of output waveform of an UPS is determined by the harmonic contents present in it. An ideal UPS should only have a fundamental harmonic component at the designed frequency. 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.

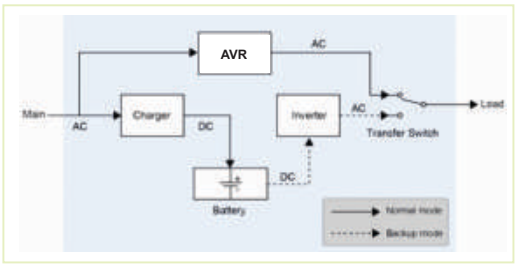
Therefore, Mathematical analysis, simulation results and practical implementation of the sine wave UPS proves that output sine wave is voltage regulated, ripple less and glitch free.



Simulation in Proteus



PWM applied on two sides of bridge



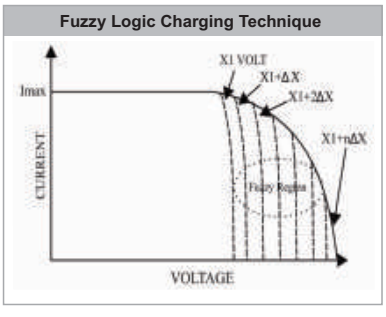
UPS with AVR Technology

Line interactive Sine Wave UPS has a very unique inbuilt technology which increases the life of IT appliances. This in built technology is called as the Automatic Voltage regulator (AVR) technology. The unique feature of the AVR Technology is that it maintains stable output voltage range (200V-250V) despite any low or high fluctuations in the input voltage/main supply to the IT appliances. It also protects the appliances from irregular surge voltages that harm the sensitive IT appliances in the long run.

The inbuilt AVR technology internally regulates the input voltage to the battery charger to the optimum safe level; this ensures that no battery back up is used as the battery charger is not switched off. This helps in saving the backup power as well as increasing the battery life.

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.

The FLC technology ensures the following:

- **Larger Battery Life**
- **Reduced Water Topping**
- **Huge Savings on Electricity**

ORIGINAL

No. 12764

GOVERNMENT OF INDIA

THE PATENT OFFICE

CERTIFICATE OF REGISTRATION OF DESIGN

Design No. 216026
Date 25TH 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 13-02 in respect of the application of such design to "SINE WAVE UPS" in the name of SU-KAM POWER SYSTEMS LTD, PLOT NO.WZ-1401/2, NANGAL RAYA, 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.

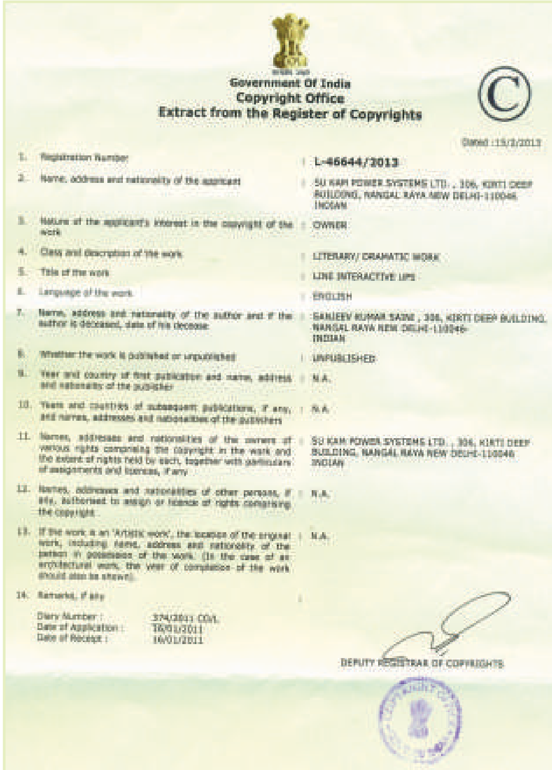
Controller General of Patents, Designs and Trade Marks

*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
24TH APR. 2009

Patent - 216026



Government Of India
Copyright Office
Extract from the Register of Copyrights

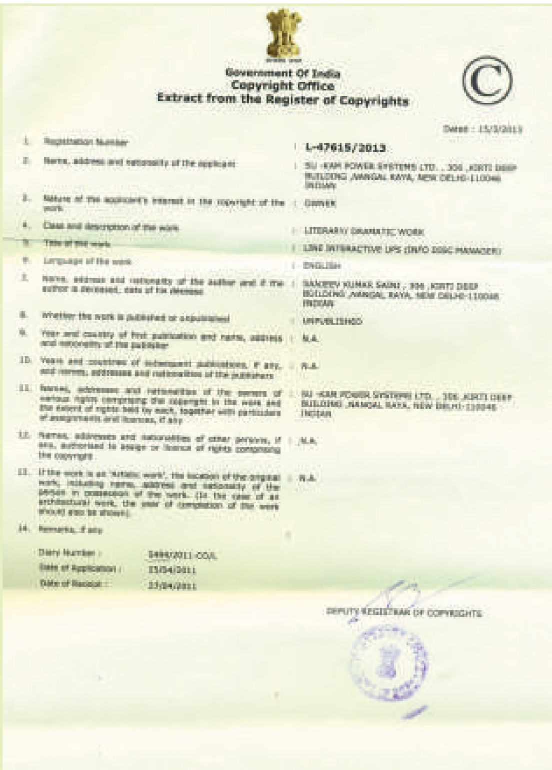
Dated :15/3/2013

1.	Registration Number	L-46644/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	LINE INTERACTIVE UPS
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 374/2011 CO/L
Date of Application : 16/01/2011
Date of Receipt : 16/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L-46644/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

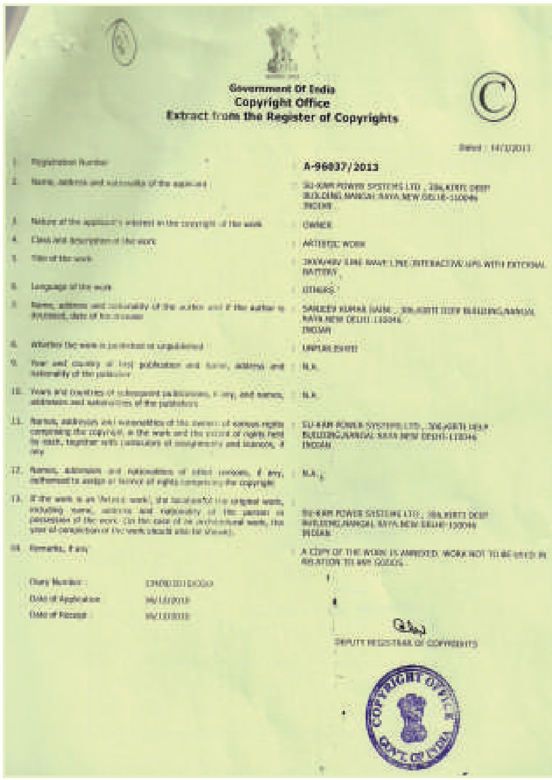
Dated : 15/3/2013

1.	Registration Number	L-47615/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	LINE INTERACTIVE UPS (INFO DISC MANAGER)
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 3499/2011-CO/L
Date of Application : 15/04/2011
Date of Receipt : 27/04/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L-47615/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

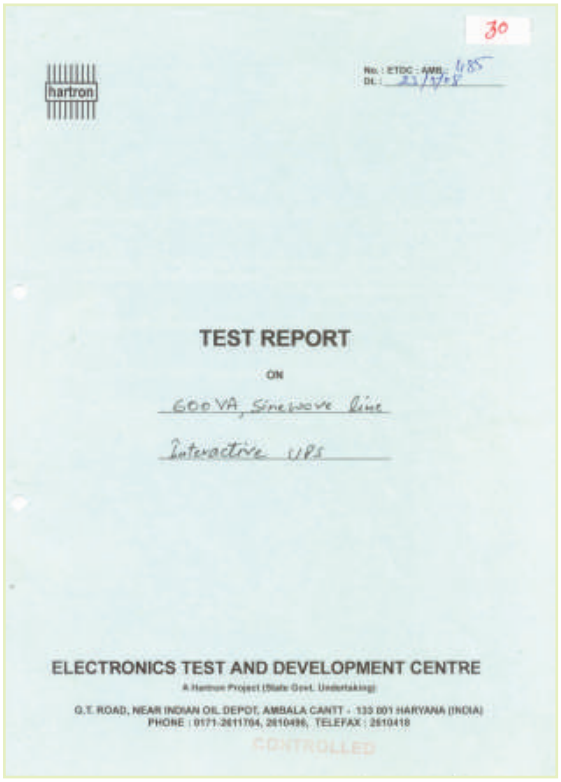
Dated : 14/1/2013

1.	Registration Number	A-96037/2013
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	[illegible] SINE WAVE LINE INTERACTIVE UPS WITH EXTERNAL BATTERY
6.	Language of the work	OTHERS
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, authorised to assign or licence 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 : [illegible]
Date of Application : [illegible]
Date of Receipt : [illegible]

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-96037/2013



TEST REPORT

ON

600VA, Sinewave line Interactive UPS

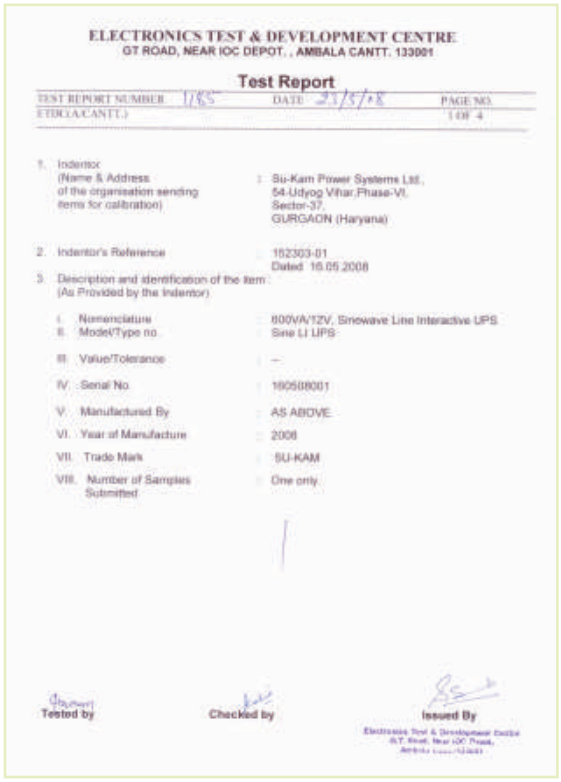
ELECTRONICS TEST AND DEVELOPMENT CENTRE

A Hartron Project (State Govt. Undertaking)

G.T. ROAD, NEAR INDIAN OIL DEPOT, AMBALA CANTT - 133 001 HARYANA (INDIA)
PHONE : 0171-2611704, 2610496, TELEFAX : 2610418

CONTROLLED

Test Report Certificate - Page 1



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

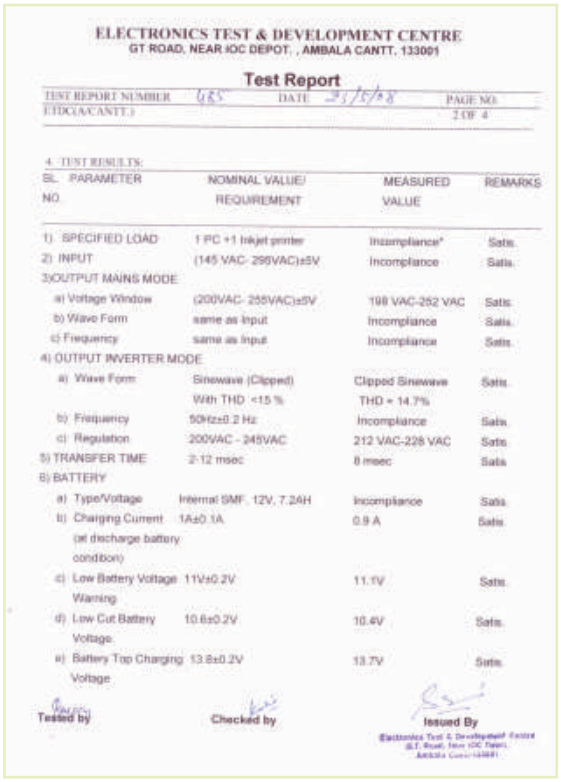
Test Report

TEST REPORT NUMBER 185 DATE 23/5/08 PAGE NO. 1 OF 4
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 : 152303-01 Dated 16.05.2008
3. Description and identification of the item (As Provided by the Indentor)
   - i. Nomenclature : 600VA/12V, Sinewave Line Interactive UPS
   - ii. Model/Type no. : Sine LI UPS
   - iii. Value/Tolerance : –
   - iv. Serial No. : 160508001
   - v. Manufactured By : AS ABOVE
   - vi. Year of Manufacture : 2008
   - vii. Trade Mark : SU-KAM
   - viii. Number of Samples Submitted : One only

Tested by Checked by Issued By

Test Report Certificate - Page 2



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

Test Report

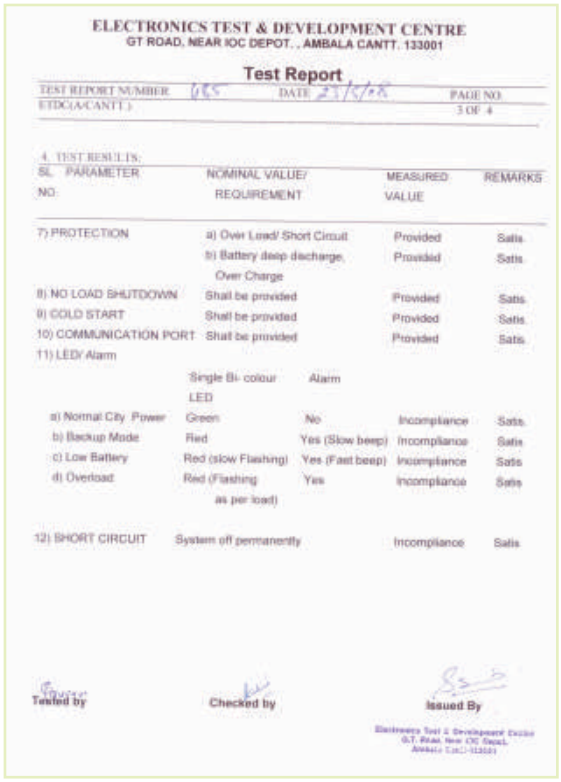
TEST REPORT NUMBER 185 DATE 23/5/08 PAGE NO. 2 OF 4
ETDC(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT	MEASURED VALUE	REMARKS
1)	SPECIFIED LOAD	1 PC +1 Inkjet printer	Incompliance*	Satis.
2)	INPUT	(145 VAC- 295VAC)±5V	Incompliance	Satis.
3)	OUTPUT MAINS MODE			
	a) Voltage Window	(200VAC- 255VAC)±5V	198 VAC-252 VAC	Satis.
	b) Wave Form	same as Input	Incompliance	Satis.
	c) Frequency	same as Input	Incompliance	Satis.
4)	OUTPUT INVERTER MODE			
	a) Wave Form	Sinewave (Clipped) With THD <15 %	Clipped Sinewave THD = 14.7%	Satis.
	b) Frequency	50Hz±0.2 Hz	Incompliance	Satis.
	c) Regulation	200VAC - 245VAC	212 VAC-228 VAC	Satis.
5)	TRANSFER TIME	2-12 msec	8 msec	Satis.
6)	BATTERY			
	a) Type/Voltage	Internal SMF, 12V, 7.2AH	Incompliance	Satis.
	b) Charging Current (at discharge battery condition)	1A±0.1A	0.9 A	Satis.
	c) Low Battery Voltage Warning	11V±0.2V	11.1V	Satis.
	d) Low Cut Battery Voltage	10.6±0.2V	10.4V	Satis.
	e) Battery Top Charging Voltage	13.8±0.2V	13.7V	Satis.

Tested by Checked by Issued By

Test Report Certificate - Page 3



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

Test Report

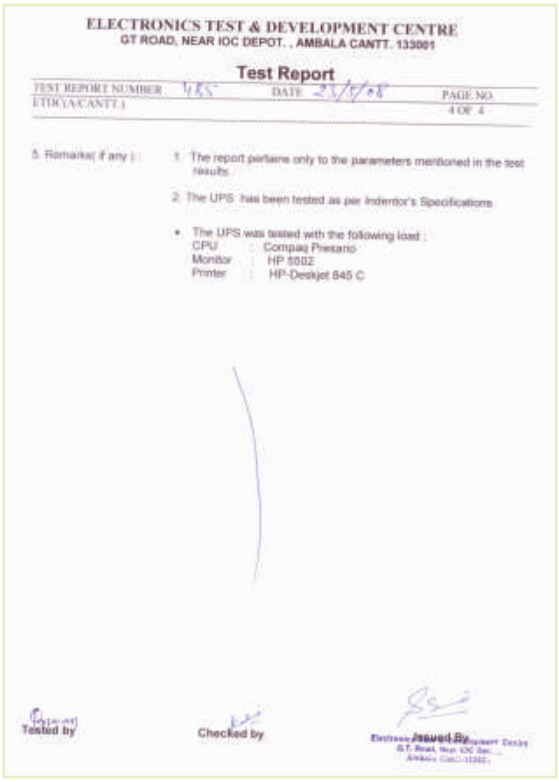
TEST REPORT NUMBER 185 DATE 23/5/08 PAGE NO. 3 OF 4
ETDC(A/CANTT.)

4. TEST RESULTS:

SL. NO.	PARAMETER	NOMINAL VALUE/ REQUIREMENT		MEASURED VALUE	REMARKS
7)	PROTECTION	a) Over Load/ Short Circuit		Provided	Satis.
		b) Battery deep discharge, Over Charge		Provided	Satis.
8)	NO LOAD SHUTDOWN	Shall be provided		Provided	Satis.
9)	COLD START	Shall be provided		Provided	Satis.
10)	COMMUNICATION PORT	Shall be provided		Provided	Satis.
11)	LED/ Alarm				
		Single Bi- colour LED	Alarm		
	a) Normal City Power	Green	No	Incompliance	Satis.
	b) Backup Mode	Red	Yes (Slow beep)	Incompliance	Satis.
	c) Low Battery	Red (slow Flashing)	Yes (Fast beep)	Incompliance	Satis.
	d) Overload	Red (Flashing as per load)	Yes	Incompliance	Satis.
12)	SHORT CIRCUIT	System off permanently		Incompliance	Satis.

Tested by Checked by Issued By

Test Report Certificate - Page 4



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

Test Report

TEST REPORT NUMBER : ETDC(A/CANTT.) 485 DATE : 23/5/08 PAGE NO. : 4 OF 4

5. Remarks(if any) :

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

- The UPS was tested with the following load :
  CPU : Compaq Presario
  Monitor : HP 5502
  Printer : HP-Deskjet 845 C

Tested by

Checked by

Issued By

Test Report Certificate - Page 5

ONLINE UPS SERIES

1 Phase In - 1 Phase Out

2KVA/180V to 10KVA/192V

Su-Kam's Online UPS provides highest level of Power Protection, Power Conditioning and also longer backup. Galvanic isolation ensures that no disturbances from mains supply travels to the connected load thus ensuring full safety to the equipment & also maximum uptime. Based on world's most advanced Digital Signal Processing technology, these ensure full safety of highly sophisticated equipment connected. They protect business centers against sudden blackouts and variations in the main power supply which may lead to malfunction and severe data losses. So, no more full-stops at work, ever!

Available:

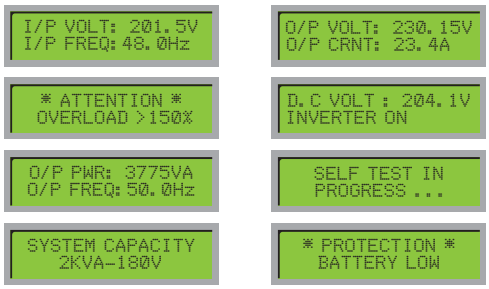
- Double Conversion Online UPS - IntelliQ Series (1 Phase in - 1 Phase out)
- Double Conversion Online UPS - IntelliQ Series (3 Phase in - 1 Phase out)
- Double Conversion Online UPS - IntelliQ Series (3 Phase in - 3 Phase out)
- Triple Conversion Online UPS - Sinclair-i Series (1 Phase in - 1 Phase out)

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 2 KVA/180V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

2KVA/180V				
Load Options	A	B	C	D
Computer	6	-	2	2
Printer	2	-	-	1
LCD TV 32”	-	8	-	-
CFL	-	8	10	5
Server	-	-	1	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	10 Hrs.	11 Hrs.	16 Hrs. 20 Mins.	13 Hrs. 30 Mins.
135 AH	13 Hrs. 40 Mins.	15 Hrs.	22 Hrs.	18 Hrs. 10 Mins.

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

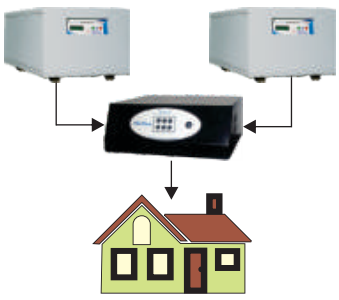
Rating	2KVA
INPUT PARAMETERS	
Input Voltage Range	165V – 275V ± 10V
OUTPUT PARAMETERS	
Voltage Regulation	230V ± 2%
Frequency regulation	50Hz ± 0.2Hz
Peak Efficiency at inverter mode	>85%
Output Waveform	Sine Wave
Transient Response	± 10% recovery within 1.5 Cycle (For 100% Dynamic loading)
Total Harmonic Distortion	< 5.5% At Full Load (Resistive Load)
Crest Factor	3:1
Transfer Time	Zero
Full load	1600w
Over Load Handling capacity	110% for 5minutes + 10 sec., 125% for 1 minutes + 5 sec., 150% for 10 Seconds + 2 sec., 200% for 2 -3 Seconds, 300% for 1 Second
Load Power Factor	0.8 lag to unity
BATTERY PARAMETERS	
Nominal Battery Voltage	180VDC
Battery Charging Current	1Amp – 10Amp + 1Amp
(Settable By Pot)	
Max. Battery Charging Voltage	204V + 2V
Nominal Battery Voltage / Ah	180V / 7.2Ah – 135Ah@ah/10 amp, >135Ah – 200Ah @ ah/20 amp.*
Battery Low Alarm	165V + 1V
PROTECTION	
Battery Low Protection	162V + 1V
Battery High Protection	225V + 1V
O/P Voltage High Protection	260V + 2%
Short Circuit Protection >300%	Yes (permanent short circuit)
USER INTERFACE	
RS-232 Comm. Port	Yes
Operating system	Microsoft Windows XP
ENVIRONMENTAL PARAMETERS	
Accoustic Noise (at 1 mts)	< 50 db
Operating Temperature	0oC-45oC
Cooling	In-built Instrument Fan
OTHERS	
Display	16 x 2 Lines LCD
Dimensions (In mm) W X D X H	350X550X325
Weight without Packing	40Kg (approx.)

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

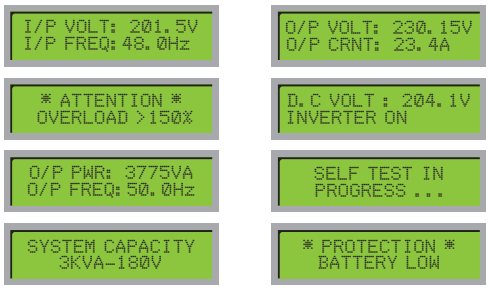
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 3 KVA/180V & 5 KVA/180V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	3KVA/180V			5KVA/180V		
Load Options	A	B	C	A	B	C
Computer	7	-	3	10	-	5
Printer	1	-	-	2	-	-
LCD TV 32”	-	10	-	-	15	-
CFL	10	10	5	15	15	10
Server	-	-	2	-	-	3
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
100 AH	10 Hrs.	8 Hrs.	10 Hrs. 20 Mins.	5 Hrs. 40 Mins.	5 Hrs.	5 Hrs. 40 Mins.
135 AH	13 Hrs. 30 Mins.	12 Hrs.	13 Hrs. 50 Mins.	8 Hrs. 20 Mins.	7 Hrs. 20 Mins.	8 Hrs. 20 Mins.

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Rating	3KVA	5KVA
INPUT PARAMETERS		
Input Voltage Range	165V – 275V ± 10V	
OUTPUT PARAMETERS		
Voltage Regulation	230V ± 2%	
Frequency regulation	50Hz ± 0.2Hz	
Peak Efficiancy at inverter mode	>87%	>90%
Output Waveform	Sine Wave	
Transient Response	± 10% recovery within 1.5 Cycle (For 100% Dynamic loading)	
Total Harmonic Distortion	< 5.5% At Full Load (Resistive Load)	
Crest Factor	3:1	
Transfer Time	Zero	
Full load	2400w	4000W
Over Load Handling capacity	110% for 5minutes + 10 sec., 125% for 1 minutes + 5 sec., 150% for 10 Seconds + 2 sec.,	
	200% for 2 -3 Seconds, 300% for 1 Second	
Load Power Factor	0.8 lag to unity	
BATTERY PARAMETERS		
Nominal Battery Voltage	180VDC	
Battery Charging Current	1Amp – 10Amp + 1Amp	
(Settable By Pot)		
Max. Battery Charging Voltage	204V + 2V	
Nominal Battery Voltage / Ah	180V / 7.2Ah – 135Ah@ah/10 amp, >135Ah – 200Ah @ ah/20 amp.*	
Battery Low Alarm	165V + 1V	
PROTECTION		
Battery Low Protection	162V + 1V	
Battery High Protection	225V + 1V	
O/P Voltage High Protection	260V + 2%	
Short Circuit Protection >300%	Yes (permanent short circuit)	
USER INTERFACE		
RS-232 Comm. Port	Yes	
Operating system	Microsoft Windows XP	
ENVIRONMENTAL PARAMETERS		
Accoustic Noise (at 1 mts)	< 50 db	
Operating Temperature	0oC-45oC	
Cooling	In-built Instrument Fan	
OTHERS		
Display	16 x 2 Lines LCD	
Dimensions (In mm) W X D X H	350X475X611	350X475X610

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.

Battery Equalizer

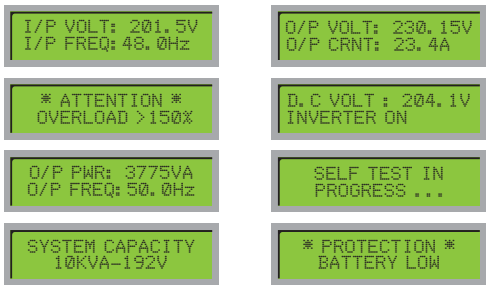
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 7.5KVA/192V & 10 KVA/192V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	7.5KVA/192V			10KVA/192V		
Load Options	A	B	C	A	B	C
Computer	15	-	5	20	-	10
Printer	2	-	-	2	-	-
LCD TV 32”	-	15	-	-	20	-
CFL	15	20	15	20	25	20
Server	-	-	4	-	-	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
100 AH	4 Hrs. 20 Mins.	5 Hrs. 20 Mins.	4 Hrs. 50 Mins.	3 Hrs. 20 Mins.	3 Hrs. 50 Mins.	3 Hrs.
135 AH	6 Hrs. 20 Mins.	8 Hrs.	7 Hrs.	4 Hrs. 40 Mins.	5 Hrs. 20 Mins.	4 Hrs. 20 Mins.

Intelli-Q Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

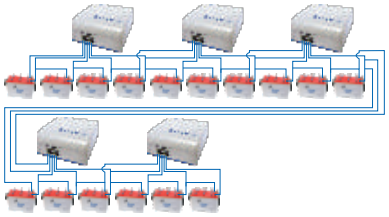
Rating	7.5KVA	10KVA
INPUT PARAMETERS		
Input Voltage Range	165V – 275V ± 10V	
OUTPUT PARAMETERS		
Voltage Regulation	230V ± 2%	
Frequency regulation	50Hz ± 0.2Hz	
Peak Efficiency at inverter mode	>90%	
Output Waveform	Sine Wave	
Transient Response	± 10% recovery within 1.5 Cycle (For 100% Dynamic loading)	
Total Harmonic Distortion	< 5.5% At Full Load (Resistive Load)	
Crest Factor	3:1	
Transfer Time	Zero	
Full load	6000W	8000W
Over Load Handling capacity	110% for 5minutes + 10 sec., 125% for 1 minutes + 5 sec., 150% for 10 Seconds + 2 sec.,	
	200% for 2 -3 Seconds, 300% for 1 Second	
Load Power Factor	0.8 lag to unity	
BATTERY PARAMETERS		
Nominal Battery Voltage	192VDC	
Battery Charging Current	1Amp – 10Amp + 1Amp	
(Settable By Pot)		
Max. Battery Charging Voltage	218V + 2V	
Nominal Battery Voltage / Ah	180V / 7.2Ah – 135Ah@ah/10 amp, >135Ah – 200Ah @ ah/20 amp.*	
Battery Low Alarm	176V + 1V	
PROTECTION		
Battery Low Protection	173V + 1V	
Battery High Protection	240V + 1V	
O/P Voltage High Protection	260V + 2%	
Short Circuit Protection >300%	Yes (permanent short circuit)	
USER INTERFACE		
RS-232 Comm. Port	Yes	
Operating system	Microsoft Windows XP	
ENVIRONMENTAL PARAMETERS		
Accoustic Noise (at 1 mts)	< 50 db	
Operating Temperature	0oC-45oC	
Cooling	In-built Instrument Fan	
OTHERS		
Display	16 x 2 Lines LCD	
Dimensions (In mm) W X D X H	350X550X660	350X550X660
Weight without	approx 93Kg (approx.)	approx 108Kg (approx.)

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



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.

ONLINE UPS SERIES

3 Phase In - 1 Phase Out

7.5KVA/360V to 25KVA/360V

The On-line UPS provides the highest level of power protection for the serious home office user. Su- Kam on-line UPS provides an electrical firewall between the incoming utility power and sensitive electronic equipment thus protecting the equipment from power quality problems. This is accomplished inside the UPS in several tiers of circuits.

Data Centers, LAN nodes, telecommunication system, check out system in supermarket, lighting systems, production units, safety systems etc.,must always be protected against problems in power supply. Sudden blackouts and variations in the main power supply may lead to malfunction and severe data losses.

The simplest and most cost effective way of coping with these disturbances is to install an Uninterruptible Power Supply. Acting as an interface between the mains and the loads, the UPS guarantees the continuity and the quality of electrical power supplied to the loads. In fact Su-Kam UPS stabilizes the voltage perfectly eliminating all disturbances.

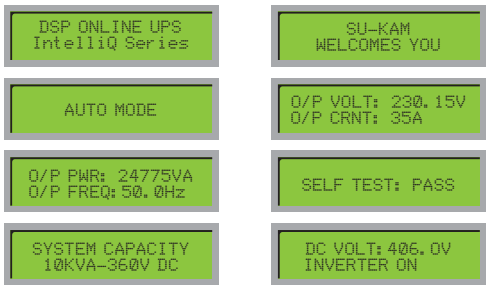
Based on world's most advanced Digital Signal processing technology, Su-Kam On-line UPS system ensures smooth & trouble free working.

Intelli-Q Online UPS Series

3 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 10KVA/360V & 15KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	10KVA/360V			15KVA/360V		
Load Options	A	B	C	A	B	C
Computer	20	-	10	25	-	15
Printer	2	-	-	3	-	-
LCD TV 32”	-	20	-	-	30	-
CFL	20	25	20	25	40	25
Server	-	-	5	-	-	6
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
100 AH	7 Hrs.	8 Hrs. 20 Mins.	6 Hrs. 40 Mins.	5 Hrs. 10 Mins.	5 Hrs.	4 Hrs. 40 Mins.
135 AH	10 Hrs. 20 Mins.	11 Hrs. 50 Mins.	9 Hrs. 40 Mins.	7 Hrs. 30 Mins.	7 Hrs. 10 Mins.	6 Hrs. 50 Mins.

Intelli-Q Online UPS Series

3 Phase In - 1 Phase Out

Technical Specifications

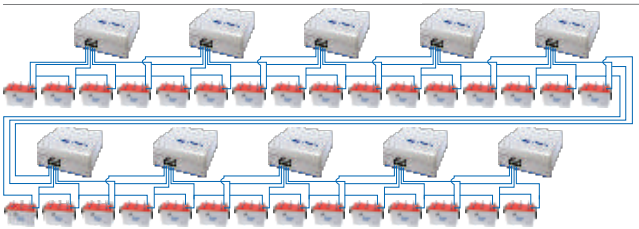
Ratings	10 KVA	15 KVA
INPUT		
No. of Phases	3 Phase- 4 Wire	
Voltage Range	310 V – 480 Volt AC	
Input Frequency Range	45 - 55 Hz	
OUTPUT		
Power	8000 W	12000 W
Load PF Range	0.8 lagging	
Phase	1 Phase -2 Wire (P,N)	
Output Waveform	Pure Sine Wave	
Voltage	230V ± 1%	
Frequency	50Hz +/-0.1%	
Load Crest Factor	> 3:1	
Output Voltage THD	<=3% on Linear Load	
Loading Capacity	110% for 5 Minutes/ 125% for 1 Min/ 150% for 10 Sec	
BY-PASS		
Capacity	125% continues	
Maintenance By-Pass	Available	
BATTERIES		
No. of 12V Batteries	30	
Voltage	360 V DC	
Battery Charging current	0.8 Amp to 8 Amp	
Battery Recommendation	From 7.2 Ah to 200 Ah	
Battery Self Test	Automatic & Manual	
USER INTERFACE		
Comunication port	RS-232 Server and Client	
Operating System	Windows95/98/NT/2000/XP	
GENERAL		
Indication	LCD pannel	
Alarm	Mains Failure, Battery Low, Over Load Short Circuit	
Protection	Short Circuit , Over Voltage & Under Voltage Protection.	
Cooling	Forced Air Cooling	
UPS Efficiency	> 90%	
Operating Temperature	0-45DegC	
Operating Humidity	95% Condensing	
Monitoring Software	Additional Software available for remote monitoring	
Accoustic Noise	<45 Db at 1 meter	
Protection Class	Ip20	
UPS Weight (without Batteries)	131 Kg	156 Kg
Dimension (H X W X D)	450MM X 650MM X 700MM	

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

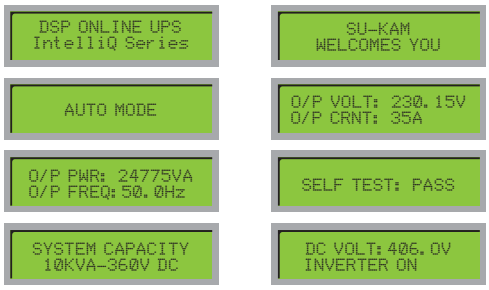
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

3 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 20KVA/360V & 25KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	20KVA/360V			25KVA/360V		
Load Options	A	B	C	A	B	C
Computer	40	-	20	40	-	25
Printer	10	-	-	12	-	-
LCD TV 32”	-	40	-	-	50	-
CFL	10	60	35	40	60	40
Server	-	-	10	-	-	10
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
150 AH	4 Hrs.	5 Hrs. 40 Mins.	4 Hrs. 40 Mins.	3 Hrs. 40 Mins.	4 Hrs. 30 Mins.	4 Hrs. 10 Mins.
165 AH	4 Hrs. 30 Mins.	6 Hrs. 20 Mins.	5 Hrs. 10 Mins.	4 Hrs. 10 Mins.	5 Hrs.	4 Hrs. 40 Mins.

Intelli-Q Online UPS Series

3 Phase In - 1 Phase Out

Technical Specifications

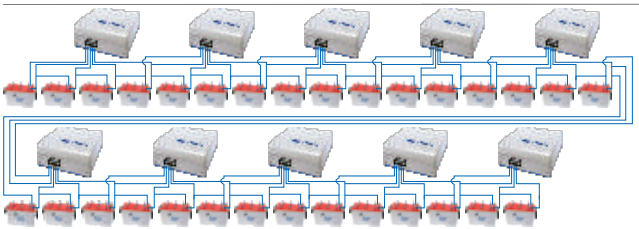
Ratings	20 KVA	25 KVA
INPUT		
No. of Phases	3 Phase- 4 Wire	
Voltage Range	310 V – 480 Volt AC	
Input Frequency Range	45 - 55 Hz	
OUTPUT		
Power	16000W	20000 W
Load PF Range	0.8 lagging	
Phase	1 Phase -2 Wire (P,N)	
Output Waveform	Pure Sine Wave	
Voltage	230V ± 1%	
Frequency	50Hz +/-0.1%	
Load Crest Factor	> 3:1	
Output Voltage THD	<=3% on Linear Load	
Loading Capacity	110% for 5 Minutes/ 125% for 1 Min/ 150% for 10 Sec	
BY-PASS		
Capacity	125% continues	
Maintenance By-Pass	Available	
BATTERIES		
No. of 12V Batteries	30	
Voltage	360 V DC	
Battery Charging current	0.8 Amp to 8 Amp	
Battery Recommendation	From 7.2 Ah to 200 Ah	
Battery Self Test	Automatic & Manual	
USER INTERFACE		
Comunication port	RS-232 Server and Client	
Operating System	Windows95/98/NT/2000/XP	
GENERAL		
Indication	LCD pannel	
Alarm	Mains Failure, Battery Low, Over Load Short Circuit	
Protection	Short Circuit , Over Voltage & Under Voltage Protection.	
Cooling	Forced Air Cooling	
UPS Efficiency	> 90%	
Operating Temperature	0-45DegC	
Operating Humidity	95% Condensing	
Monitoring Software	Additional Software available for remote monitoring	
Accoustic Noise	<45 Db at 1 meter	
Protection Class	Ip20	
UPS Weight (without Batteries)	170 Kg	
Dimension (H X W X D)	450MM X 700MM X 730MM	

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Single Phase Static Bypass Switch

The single phase electronic static bypass switch provides continuous power to the load by utilizing two independent power sources; the switch monitors both sources continuously to provide the better of the two available power sources to the electrical load connected at the output. It operates with two UPS or non-UPS power sources (grid or Generator) providing a sinusoidal output. In case power from one source is cut off, the hot swap function of input sources i.e. servicing of one of the sources can be done without interrupting the power flow to load. It has a Fast Transfer Time with High surge current capability that enables minimal changeover time between switchovers. The single phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



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.

DET NORSKE VERITAS

CERTIFICATE OF CONFORMITY

CERTIFICATE NO. DNV-2005-OSL-LVD/EMC-0242
This Certificate consists of 3 pages

This is to confirm that the following equipment
ONLINE UPS
OFFLINE UPS
INVERTER

with type designations
(see overleaf)

manufactured by
SU-KAM POWER SYSTEMS LTD.,
196-C, UDYOG VIHAR, SECTOR-37, PHASE VI, GURGAON-122001 HARYANA , INDIA

are found to comply with
The essential health and safety requirements specified in Annex I of Council Directive 73/23/EEC, as amended and the essential protection requirements specified in Article 4 of Council Directive 89/336/EEC, as amended.

The products have been assessed with respect to the technical documentation as specified in point 3 of Annex IV of 73/23/EEC and to suitable standards referred to in Article 7(1)(a) of 89/336/EEC

Further details of the products and conditions for certification are given overleaf.

Place and date
Høvik, 28th June 2005
for DET NORSKE VERITAS CERTIFICATION AS

Lise Gangerdal
Head of Section

Per Gulbrandsen / Huu Dung Dinh

CE Certificate

Duplicate Certificate

भारत सरकार
GOVERNMENT OF INDIA
व्यापार चिन्ह रजिस्ट्री
TRADE MARKS REGISTRY
No. 817143

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)

Trade Mark No. 1634256 Date 26/12/2007 Class 1401

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. 1634256 as of the Date 26 December 2007 in respect of

Good Description Continued

As Annexed

Dated at my direction, this 31st day of March 2008

Delhi

Trade Marks Registry

Registrar of Trade Marks

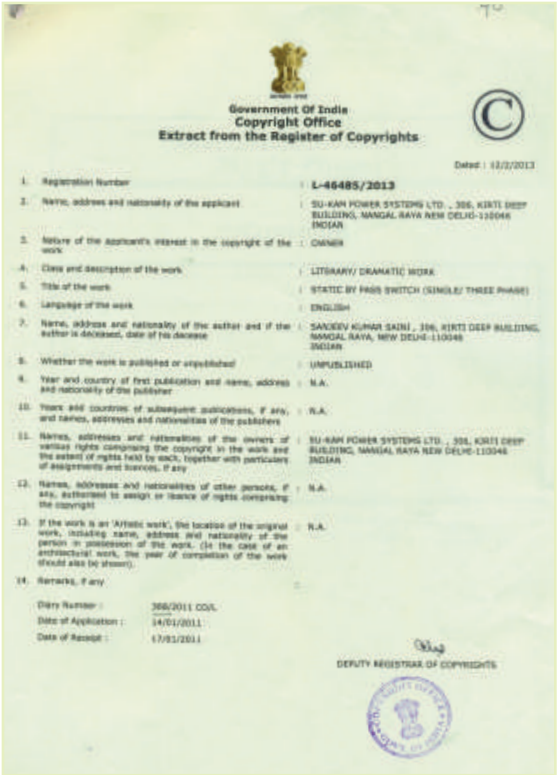
Certificate

Annexure of Certificate No. 817143
Trade Mark No. 1634256 Date : 26/12/2007 Page 2/2

INTELLI-Q

9. SCIENTIFIC, NAUTICAL, SURVEYING, PHOTOGRAPHIC, CINEMATOGRAPHIC, OPTICAL, WEIGHING, MEASURING, SIGNALING, CHECKING, (SUPERVISION), LIFE SAVING AND TEACHING APPARATUS AND INSTRUMENTS, APPARATUS AND INSTRUMENTS FOR CONDUCTING, SWITCHING, TRANSFORMING, ACCUMULATING, REGULATING OR CONTROLLING ELECTRICITY, APPARATUS FOR RECORDING, TRANSMISSION OR REPRODUCTION OF SOUND OR IMAGES, MAGNETIC DATA CARRIERS, RECORDING DISCS, AUTOMATIC VENDING MACHINES AND MECHANISMS FOR COIN OPERATED APPARATUS, CASH REGISTERS, CALCULATING MACHINES, DATA PROCESSING EQUIPMENT AND COMPUTERS, FIRE EXTINGUISHING APPARATUS AND ELECTRONIC INVERTER BATTERIES, UPS SYSTEMS, SOLAR PRODUCTS, ALL INCLUDED IN CLASS 9.

Certificate



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 12/2/2013

1.	Registration Number	: L-46485/2013
2.	Name, address and nationality of the applicant	: SU-KAM POWER SYSTEMS LTD ., 306, KIRTI DEEP BUILDING, MANGAL 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	: LITERARY/ DRAMATIC WORK
5.	Title of the work	: STATIC BY PASS SWITCH (SINGLE/ THREE PHASE)
6.	Language of the work	: ENGLISH
7.	Name, address and nationality of the author and if the author is deceased, date of his decease	: SANDEEV KUMAR SAINI , 306, KIRTI DEEP BUILDING, MANGAL 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, MANGAL RAYA NEW DELHI-110046 INDIAN
12.	Names, addresses and nationalities of other persons, if any, authorized to assign or licence 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).	: N.A.
14.	Remarks, if any	

Diary Number : 368/2011 CO/L
Date of Application : 14/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L43485/2013

Government of India
Copyright Office
Extracts from Register of Copyrights

Dated 20/09/2007

1.	Registration No:	L-28671/2007
2.	Name,address and nationality of the applicant:	SUKAM POWER SYSTEMS LTD. WZ-1402, NANGAL RAYA, N. DELHI - 46 INDIAN
3.	Nature of applicant's interest in the copyright of the work:	OWNER
4.	Class and description of the work:	LITERARY
5.	Title of the work:	POWER DOC DSP ONLINE UPS MONITORING AND CONTROLLING SOFTWARE
6.	Language of the work:	ENGLISH
7.	Name, address and nationality of the author and if the author is deceased, date of his decease:	KUNWER SACHDEV F-37, GREENWOODS CITY GURGAON INDIAN
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 owners of various rights comprising the copyright in the work and the extent of rights held by each, together with particulars of assignments and licenses, if any:	SAME AS IN COLMN 2 ABOVE
12.	Names, addresses and nationalities of other persons, if any, authorised to assign or licence of rights comprising the copyright:	NIL
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)	N.A
14.	Remarks:	A SEALED COPY OF THE WORK IS RETURNED AND ANOTHER SEALED COPY IS KEPT.

Diary No. 8964/2006-CO/L
Date of Application: 21/12/2006
Date of Receipt: 21/12/2006

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L28671/2007

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated :28/12/2012

1.	Registration Number	A-95394/2012
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	PCB LAYOUT OF DRIVER CARD
6.	Language of the work	OTHERS
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, authorised to assign or licence 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	

Diary Number : 10931/2010-CO/A
Date of Application : 06/12/2012
Date of Receipt : 06/12/2012

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-95394/2012

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 21/1/2013

1.	Registration Number	L-45281/2013
2.	Name, address and nationality of the applicant	M/S 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	LITERARY/ DRAMATIC WORK
5.	Title of the work	SINGLE PHASE ONLINE UPS MONITORING SOFTWARE
6.	Language of the work	ENGLISH
7.	Name, address and nationality of the author and if the author is deceased, date of his decease	MR SANJEEV KUMAR SAINI , M/S SU-KAM POWER SYSTEMS LTD. , 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	M/S 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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 13556/2010/CO/L
Date of Application : 22/12/2010
Date of Receipt : 22/12/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L45281/2013

Copyright Office

36

Page 3 of 3

Government of India
Copyright Office
Extract from the Register of Copyrights

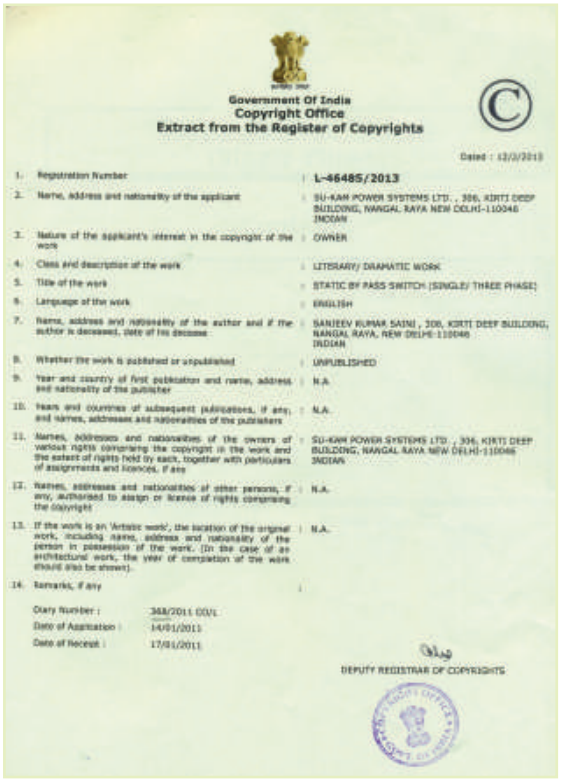
Dated :15/1/2013

1.	Registration Number	L-46639/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	COMMUNICATION VALIDATOR
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 172/2011 CO/L
Date of Application : 06/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L46639/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 12/2/2013

1.	Registration Number	L-46485/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	STATIC BY PASS SWITCH (SINGLE/ THREE PHASE)
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 348/2011 CO/L
Date of Application : 14/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L-46485/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 12/2/2013

1.	Registration Number	L-46480/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	EMBEDDED NETWORK INTERFACE CARD
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 421/2011-CO/L
Date of Application : 01/02/2011
Date of Receipt : 01/02/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L-46480/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

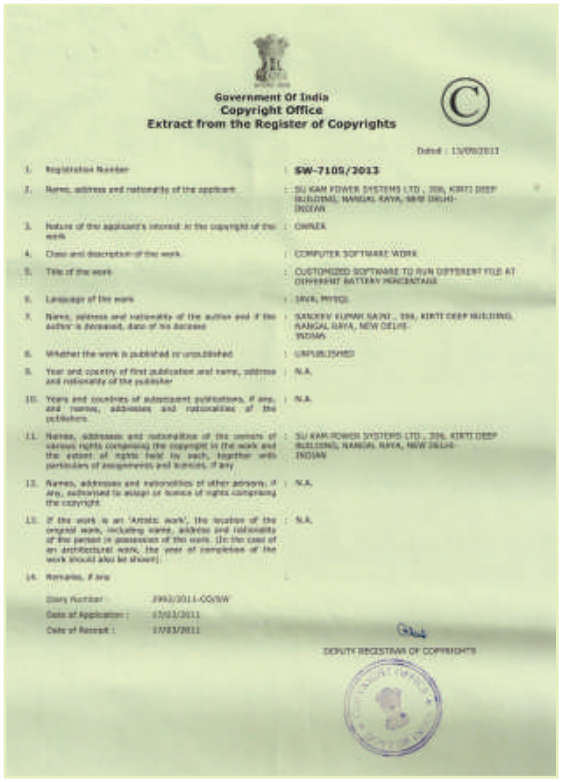
Dated : 13/09/2013

1.	Registration Number	SW-7102/2013
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	COMPUTER SOFTWARE WORK
5.	Title of the work	STATIC BY PASS SWITCH (SINGLE/ THREE PHASE)
6.	Language of the work	JAVA, MYSQL
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 2999/2011-CO/SW
Date of Application : 17/03/2011
Date of Receipt : 17/03/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - SW-7102/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 13/09/2013

1.	Registration Number	SW-7105/2013
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	COMPUTER SOFTWARE WORK
5.	Title of the work	CUSTOMIZED SOFTWARE TO RUN DIFFERENT FILE AT DIFFERENT BATTERY PERCENTAGE
6.	Language of the work	JAVA, MYSQL
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 3003/2011-CO/SW
Date of Application : 17/03/2011
Date of Receipt : 17/03/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - SW-7105/2013

ONLINE UPS SERIES
INTELLI-Q

3 Phase In - 3 Phase Out

5KVA/360V to 50KVA/360V

Su-Kam's IntelliQ Series Online UPS is an on-line double conversion UPS with a transformer isolated inverter. IntelliQ has a compact footprint and high quality output to provide the ultimate power protection for "mission critical" applications: data processing, telecommunications, industrial processes, security and electro medical systems. Besides having fuzzy logic controlled battery charging, scalable runtime, cold start, it also allows you to control and analyze your power quality through power manager solution.

The IntelliQ online UPS not only provides you power backup when you need it, but it also protects the load from disturbances or fluctuations. Your Online UPS takes next to no time in switching on! Because the UPS is already online, the switchover time from mains to UPS in case of a power cut is zero.

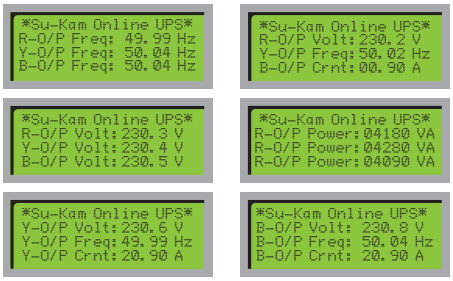
The IntelliQ range includes three phase output models from 5 to 50KVA, and single-phase output models from 75-25KVA all with a three-phase input.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 5KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

5KVA/360V				
Load Options	A	B	C	D
Computer	10	-	5	5
Printer	2	-	-	2
LCD TV 32”	-	15	-	-
CFL	15	15	10	15
Server	-	-	3	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	13 Hrs. 20 Mins	12 Hrs.	13 Hrs. 20 Mins.	7 Hrs. 20 Mins.
135 AH	18 Hrs.	16 Hrs. 20 Mins.	18 Hrs.	10 Hrs. 40 Mins.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

Technical Specifications

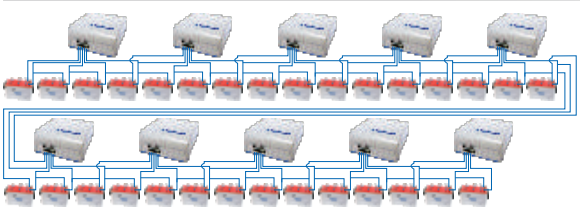
Rating	5KVA
INPUT PARAMETERS	
Phases	3 Phase - 4 Wire
I/P AC Voltage Range	280V - 480V±10V (P-P)
Input Frequency Range	45 - 55 Hz
OUTPUT PARAMETERS	
Voltage Regulation	400V ± 2% (Phase-Phase), 380V & 415V user selection also available
Phase	3 Phase - 4 Wire
Frequency regulation	50Hz±0.1Hz
Peak Efficiency at inverter mode	>=90%
Output Waveform	Pure Sine Wave
Transient Response	± 5% recovery within 1 Cycle (For 100% Dynamic loading)
Load Power Factor	0.8 lag to unity
Total Harmonic Distortion	<5 %
Transfer Time	Zero
Crest Factor	>3:1
Full load	4KW
Over Load Handling capacity	110% for 5 Minutes / 300% for 1 Second
BATTERY PARAMETERS	
No. of 12V Batteries	30
Nominal DC Voltage	360VDC
DC Voltage Range	330V - 450V
DC Voltage Low cut	330±2V
DC Voltage Low Warning	335±2V
DC Voltage high Cut	450V±2V
Battery Charging Current	1 - 10A
Battery Recommendation	From 7.2AH - 200AH
USER INTERFACE	
Communication Port	RS - 232 Server and Client
Operating System	Windows95 /98 /NT /2000 /XP
GENERAL FEATURES	
Indication	LCD panel
Alarm	Mains Failure, Battery Low, Over Load & Short Circuit
Protection	Short Circuit, Over Voltage & Under Voltage protection
Cooling	Forced Air Cooling
Operating Temperature	0 - 45 DegC
Acoustic Noise	<65 Db at 1 meter
Protection Class	Ip20
Dimensions (In mm) W X H X D	450x735 x 745

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

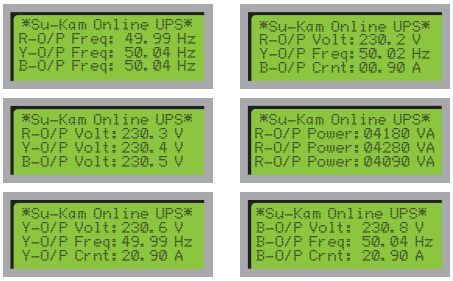
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 7.5KVA/360V & 10KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	7.5KVA/360V			10KVA/360V		
Load Options	A	B	C	A	B	C
Computer	15	-	5	20	-	10
Printer	2	-	-	2	-	-
LCD TV 32”	-	15	-	-	20	-
CFL	15	20	15	20	25	20
Server	-	-	4	-	-	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
150 AH	15 Hrs.	17 Hrs. 40 Mins.	16 Hrs. 10 Mins.	11 Hrs. 40 Mins.	13 Hrs. 20 Mins.	11 Hrs.
165 AH	16 Hrs. 30 Mins.	19 Hrs. 30 Mins.	17 Hrs. 50 Mins.	12 Hrs. 50 Mins.	14 Hrs. 40 Mins.	12 Hrs. 10 Mins.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

Technical Specifications

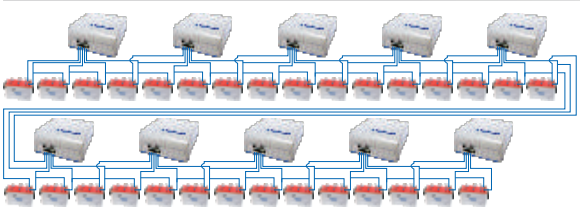
Rating	7.5KVA	10KVA
INPUT PARAMETERS		
Phases	3 Phase - 4 Wire	
I/P AC Voltage Range	280V - 480V±10V (P-P)	
Input Frequency Range	45 - 55 Hz	
OUTPUT PARAMETERS		
Voltage Regulation	400V ± 2% (Phase-Phase), 380V & 415V user selection also available	
Phase	3 Phase - 4 Wire	
Frequency regulation	50Hz±0.1Hz	
Peak Efficiency at inverter mode	>=90%	
Output Waveform	Pure Sine Wave	
Transient Response	± 5% recovery within 1 Cycle (For 100% Dynamic loading)	
Load Power Factor	0.8 lag to unity	
Total Harmonic Distortion	<5 %	
Transfer Time	Zero	
Crest Factor	>3:1	
Full load	6KW	8KW
Over Load Handling capacity	110% for 5 Minutes / 300% for 1 Second	
BATTERY PARAMETERS		
No. of 12V Batteries	30	
Nominal DC Voltage	360VDC	
DC Voltage Range	330V - 450V	
DC Voltage Low cut	330±2V	
DC Voltage Low Warning	335±2V	
DC Voltage high Cut	450V±2V	
Battery Charging Current	1 - 10A	
Battery Recommendation	From 7.2AH - 200AH	
USER INTERFACE		
Communication Port	RS - 232 Server and Client	
Operating System	Windows95 /98 /NT /2000 /XP	
GENERAL FEATURES		
Indication	LCD panel	
Alarm	Mains Failure, Battery Low, Over Load & Short Circuit	
Protection	Short Circuit, Over Voltage & Under Voltage protection	
Cooling	Forced Air Cooling	
Operating Temperature	0 - 45 DegC	
Acoustic Noise	<65 Db at 1 meter	
Protection Class	Ip20	
Dimensions (In mm) W X H X D	450x735 x 745	

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

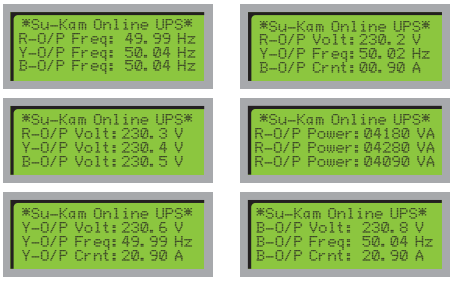
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 15KVA/360V & 20KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	15KVA/360V			20KVA/360V		
Load Options	A	B	C	A	B	C
Computer	25	-	15	40	-	20
Printer	3	-	-	10	-	-
LCD TV 32”	-	30	-	-	40	-
CFL	25	40	25	10	60	35
Server	-	-	6	-	-	10
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
150 AH	9 Hrs.	8 Hrs. 30 Mins.	8 Hrs.	8 Hrs.	5 Hrs. 50 Mins.	4 Hrs. 40 Mins.
165 AH	10 Hrs.	9 Hrs. 40 Mins.	9 Hrs. 10 Mins.	9 Hrs.	6 Hrs. 40 Mins.	5 Hrs. 20 Mins.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

Technical Specifications

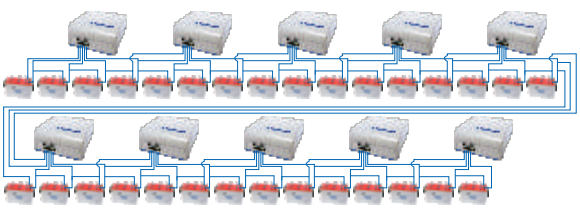
Rating	15KVA	20KVA
INPUT PARAMETERS		
Phases	3 Phase - 4 Wire	
I/P AC Voltage Range	280V - 480V±10V (P-P)	
Input Frequency Range	45 - 55 Hz	
OUTPUT PARAMETERS		
Voltage Regulation	400V ± 2% (Phase-Phase), 380V & 415V user selection also available	
Phase	3 Phase - 4 Wire	
Frequency regulation	50Hz±0.1Hz	
Peak Efficiency at inverter mode	>=90%	
Output Waveform	Pure Sine Wave	
Transient Response	± 5% recovery within 1 Cycle (For 100% Dynamic loading)	
Load Power Factor	0.8 lag to unity	
Total Harmonic Distortion	<5 %	
Transfer Time	Zero	
Crest Factor	>3:1	
Full load	6KW	8KW
Over Load Handling capacity	110% for 5 Minutes / 300% for 1 Second	
BATTERY PARAMETERS		
No. of 12V Batteries	30	
Nominal DC Voltage	360VDC	
DC Voltage Range	330V - 450V	
DC Voltage Low cut	330±2V	
DC Voltage Low Warning	335±2V	
DC Voltage high Cut	450V±2V	
Battery Charging Current	1 - 10A	
Battery Recommendation	From 7.2AH - 200AH	
USER INTERFACE		
Communication Port	RS - 232 Server and Client	
Operating System	Windows95 /98 /NT /2000 /XP	
GENERAL FEATURES		
Indication	LCD panel	
Alarm	Mains Failure, Battery Low, Over Load & Short Circuit	
Protection	Short Circuit, Over Voltage & Under Voltage protection	
Cooling	Forced Air Cooling	
Operating Temperature	0 - 45 DegC	
Acoustic Noise	<65 Db at 1 meter	
Protection Class	Ip20	
Dimensions (In mm) W X H X D	450x735 x 745	450x735 x 795

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

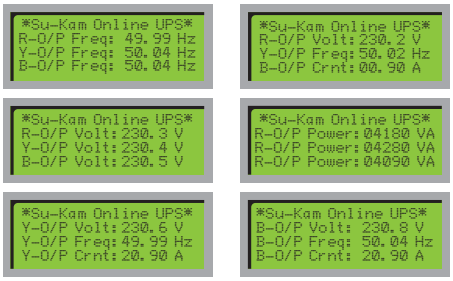
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 25KVA/360V & 30KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	25KVA/360V			30KVA/360V		
Load Options	A	B	C	A	B	C
Computer	40	-	25	45	-	30
Printer	12	-	-	15	-	-
LCD TV 32”	-	50	-	-	60	-
CFL	40	60	40	45	70	50
Server	-	-	10	-	-	10
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
150 AH	3 Hrs. 40 Mins.	4 Hrs. 35 Mins.	4 Hrs. 10 Mins.	3 Hrs. 10 Mins.	3 Hrs. 40 Mins.	3 Hrs. 50 Mins.
165 AH	4 Hrs. 20 Mins.	5 Hrs.	4 Hrs. 40 Mins.	3 Hrs. 30 Mins.	4 Hrs.	4 Hrs. 20 Mins.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

Technical Specifications

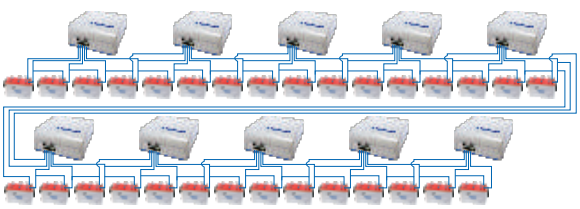
Rating	25KVA	30KVA
INPUT PARAMETERS		
Phases	3 Phase - 4 Wire	
I/P AC Voltage Range	280V - 480V±10V (P-P)	
Input Frequency Range	45 - 55 Hz	
OUTPUT PARAMETERS		
Voltage Regulation	400V ± 2% (Phase-Phase), 380V & 415V user selection also available	
Phase	3 Phase - 4 Wire	
Frequency regulation	50Hz±0.1Hz	
Peak Efficiency at inverter mode	>=90%	
Output Waveform	Pure Sine Wave	
Transient Response	± 5% recovery within 1 Cycle (For 100% Dynamic loading)	
Load Power Factor	0.8 lag to unity	
Total Harmonic Distortion	<5 %	
Transfer Time	Zero	
Crest Factor	>3:1	
Full load	20KW	24KW
Over Load Handling capacity	110% for 5 Minutes / 300% for 1 Second	
BATTERY PARAMETERS		
No. of 12V Batteries	30	
Nominal DC Voltage	360VDC	
DC Voltage Range	330V - 450V	
DC Voltage Low cut	330±2V	
DC Voltage Low Warning	335±2V	
DC Voltage high Cut	450V±2V	
Battery Charging Current	1 - 10A	
Battery Recommendation	From 7.2AH - 200AH	
USER INTERFACE		
Communication Port	RS - 232 Server and Client	
Operating System	Windows95 /98 /NT /2000 /XP	
GENERAL FEATURES		
Indication	LCD panel	
Alarm	Mains Failure, Battery Low, Over Load & Short Circuit	
Protection	Short Circuit, Over Voltage & Under Voltage protection	
Cooling	Forced Air Cooling	
Operating Temperature	0 - 45 DegC	
Acoustic Noise	<65 Db at 1 meter	
Protection Class	Ip20	
Dimensions (In mm) W X H X D	500 x 785 x 850	

Specifications are subject to change without prior notice.

POWER ACCESSORIES

Three Phase Static Bypass Switch

The three phase electronic Static Bypass Switch takes two sources of power at the input and monitors them continuously to provide the better of the two available power sources to the electrical load connected at the output. One source is used as the major one and the other as minor. The load runs normally on the master and in case of any deviation in the voltage and frequency from defined thresholds, the load is instantly transferred to the minor source to provide uninterrupted supply to the load. It is based on solid state switch's Silicon Controlled Rectifier (SCR) device so it has no mechanical moving parts and thus requires minimal maintenance. It provides fast transfer time to protect the output load. The input sources can be a combination of UPS supply, mains supply or generator supply providing sinusoidal output. The three phase electronic static bypass switch is highly useful in critical applications (exp. Hospital/IT equipment) that require zero switchover time in case of power cuts.



Battery Equalizer

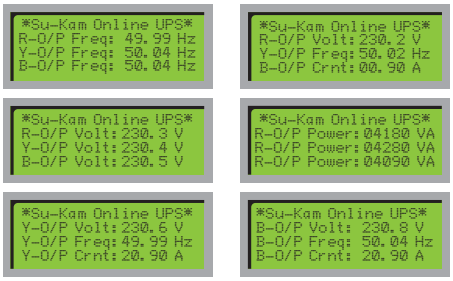
Battery equalizer is a unique product that equalizes two or more batteries in a battery bank connected in series. Battery equalizer enhances the battery life by preventing under charge and over charge of the batteries. Battery equalizer helps you save money by delaying the replacement of your batteries.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

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

RS232
Communication Port

LCD DISPLAY



INTELLI-Q SERIES - 40KVA/360V & 50KVA/360V

The Most Reliable Power Management Systems for Mission Critical Applications: True On-Line protection for Network Servers, Bridges, Hubs, Routers, Storage Devices and Critical Workstations, Medical Equipment, Industrial Products, Telecommunication Systems etc.

The primary purpose of the IntelliQ On - Line UPS System is to protect critical and sensitive equipment from electrical disturbances that may jeopardize their operation. Mains-line failures, mini blackouts, high and low voltage fluctuations, lightning, electrostatic discharge and rapid over - voltages are phenomena found in all environments. These cause damage to hardware and loss of data. When the mains supply is present, the inverter section derives its power from the mains, rectifies it and the back-up batteries are thus kept in a constantly charged state. When the mains supply fails, the source of DC power for the inverter section shifts to the battery without any break whatsoever in the output.

Principle: The Su-Kam IntelliQ On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Total Reliability
- Extendable battery capacity for longer back up
- Assured Maintainability
- Total Fault Tolerance
- Remote Monitoring
- Wider Input Voltage and Frequency Window
- Lightning and Surge Protection
- User replaceable batteries
- Hot Stand-by (Optional)
- Static Bypass Switch
- Maintenance Bypass Switch
- Built-in Cold Start
- Integrated Range

Electronic Protections Updates

- Total Fault Tolerance
- Lightning and Surge Protection
- UPS Digital Metering

Operation

- Hot Stand-by (Optional):
- Static Bypass Switch:
- Maintenance Bypass Switch:
- Built-in Cold Start:

Display

- Multifunction LCD Display Panel.
- Power Switch Active Indication.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Security System
- Process Control Equipment
- Automated Teller Machines
- Home Appliances

LOAD CHART, APPLICATIONS & BACK-UP TIME

	40KVA/360V			50KVA/360V		
Load Options	A	B	C	A	B	C
Computer	50	-	40	60	-	50
Printer	20	-	-	30	-	-
LCD TV 32”	-	70	-	-	80	-
CFL	50	80	60	60	90	70
Server	-	-	15	-	-	20
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B & C)						
180 AH	3 Hrs. 10 Mins.	3 Hrs. 50 Mins.	3 Hrs. 10 Mins.	2 Hrs. 10 Mins.	3 Hrs. 20 Mins.	2 Hrs. 20 Mins.
200 AH	3 Hrs. 50 Mins.	4 Hrs. 20 Mins.	3 Hrs. 35 Mins.	2 Hrs. 30 Mins.	3 Hrs. 40 Mins.	2 Hrs. 40 Mins.

Intelli-Q Online UPS Series

3 Phase In - 3 Phase Out

Technical Specifications

Rating	40KVA	50KVA
INPUT PARAMETERS		
Phases	3 Phase - 4 Wire	
I/P AC Voltage Range	280V - 480V±10V (P-P)	
Input Frequency Range	45 - 55 Hz	
OUTPUT PARAMETERS		
Voltage Regulation	400V ± 2% (Phase-Phase), 380V & 415V user selection also available	
Phase	3 Phase - 4 Wire	
Frequency regulation	50Hz±0.1Hz	
Peak Efficiency at inverter mode	>=90%	
Output Waveform	Pure Sine Wave	
Transient Response	± 5% recovery within 1 Cycle (For 100% Dynamic loading)	
Load Power Factor	0.8 lag to unity	
Total Harmonic Distortion	<5 %	
Transfer Time	Zero	
Crest Factor	>3:1	
Full load	32KW	40KW
Over Load Handling capacity	110% for 5 Minutes / 300% for 1 Second	
BATTERY PARAMETERS		
No. of 12V Batteries	30	
Nominal DC Voltage	360VDC	
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Acoustic Noise	<65 Db at 1 meter	
Protection Class	Ip20	
Dimensions (In mm) W X H X D	755 x 1460 x 835	

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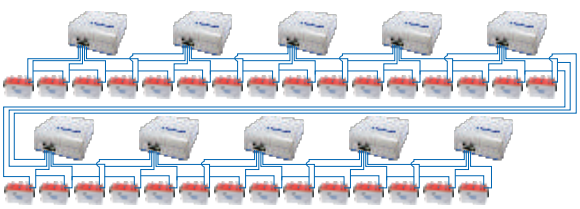

Battery Equalizer

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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.

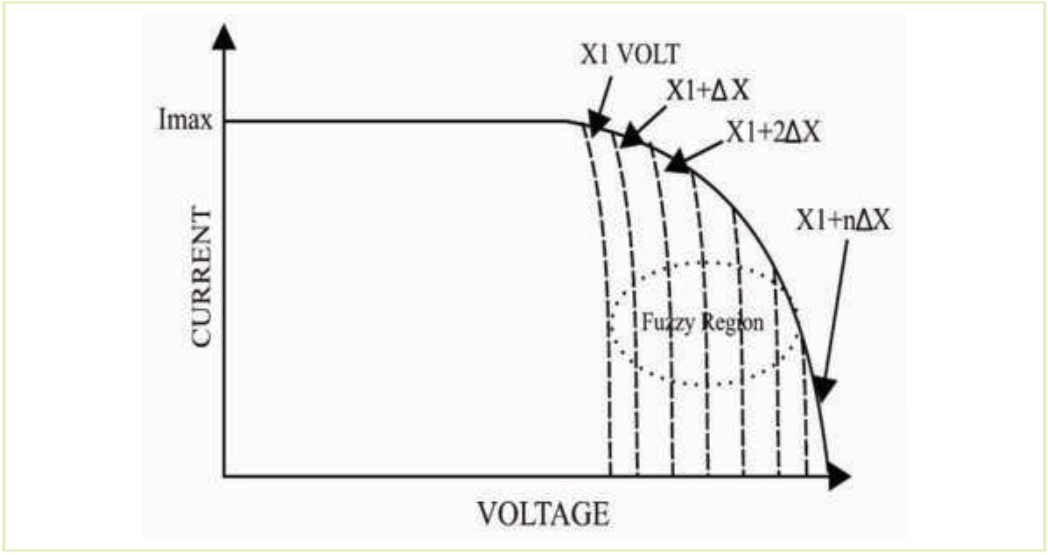
The FLC technology ensures the following:

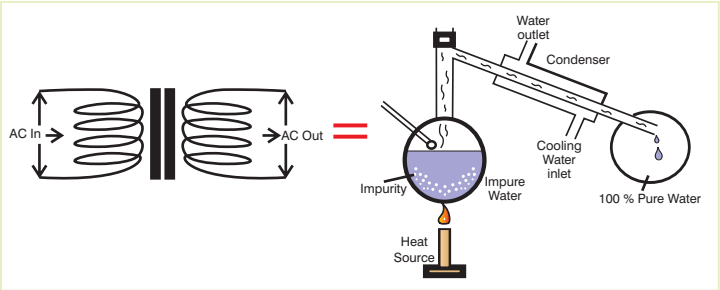
- **Larger Battery Life -** Su-Kam's FLC Technology senses the exact need of the battery every time. If an older battery is unable to accept the level of voltage defined earlier, it automatically sets a new level in accordance with the battery condition and charging need. This leads to enhanced battery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

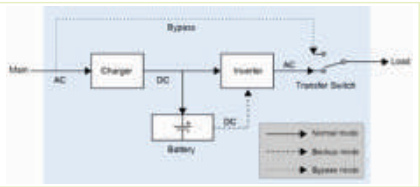




Galvanic Isolation

The Su-Kam DSP sine wave inverter System totally isolates its connected load from every power problem that arises from the mains supply. It ensures 100% protection to the load from the full range of power disturbances including harmonics, common-mode noise and fault conditions on the input bus and vice versa.

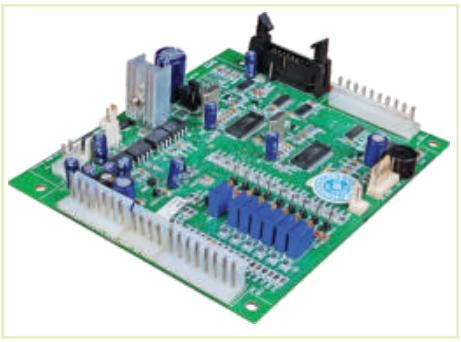
An isolation transformer is a transformer, often with symmetrical windings, Which is used to decouple two circuits. An isolation transformer allows an AC signal or power to be taken from one device and fed into another electrically connecting the two circuits. Isolation transformers block transmission of DC signals From one circuit to the other, but allow AC signals to pass. They also block interference Caused by ground loop Isolation transformers with electrostatic shields are used for power supplies for sensitive equipment such as computers or laboratory instruments.



Double Conversion VFI Technology

Intelli-Q series was developed around the highest level of protection (On-Line Double Conversion) technology whilst maintaining high efficiency and increasing real power output. The output is VFI (Voltage and Frequency Independent) providing complete isolation from the input mains power.

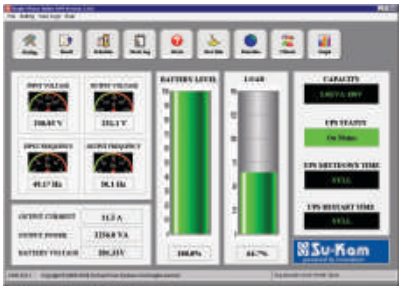
Patented DSP Based PWM Technology Using IGBT



Su-Kam IntelliQ On-Line UPS System incorporates Digital Signal Processor (DSP) Technology. This is the world's most advanced technoloy for high speed processing applications. It is unmatched in reliability and ensures very low running costs, thereby guaranteeing good returns due to energy saving. Since it provides 100% Pure Sine Wave output, it guarantees full safety of highly sophisticated equipment. It also ensures full charging and protection of the batteries and enhanced battery life. It eliminates disturbing and irritating noise, which sometimes emanates from your equipment because of inferior-power protection systems. With the use of outstanding IGBT as the power conversation component, the operating frequency of the inverter of UPS is capable of reaching tens of KHz, due to the high frequency operating characteristics of IGBT. Higher working efficiency of the inverter also improves the overall efficiency of the UPS and higher inversion frequency reduces the noise of the inverter as well.

Maintenance Bypass Switch

Incase of maintenance of the battery/failure of Online UPS or during the servicing of the Online UPS, the customer himself can directly switch to the Mains by a simple twist of a switch, and will not need any electrician to remove any wires from the Online UPS.



Power Manager (Multiple User Local Monitoring Software)

The Su-Kam DSP Sine Wave Inverter – Colossal Series have an RS-232 Interface for the Power Manager. This user-friendly Communication Software controls and monitors inverter performance and programs inverter commands. An easy- to- use software, it is based on the RS 232 world standard for interfacing Digital Signal Processor with computers. The Power Manager allows you to programme all the commands to be performed by it automatically. This software is very useful for communication systems including Satellite Systems, Air Traffic Control Systems, Internet Nodes, Bank ATM and any other application requiring maximum reliability and availability of high quality power such as computer labs, offices, biomedical instruments, telecommunication systems and industrial establishments. It ensures maximum safety for high-risk applications. Once the inverter is installed, the user need not worry about interruption, low battery level or any other damage, which would have occurred otherwise.

Power Ethernet based UPS monitoring software

This type of software is basically used to monitor different UPS installed at distant places with in the same network. e.g. A bank need this software to monitor all its UPS installed for power back of ATMs in its head office.

Features:

- Real time monitoring of all installed UPS.
- Easy monitoring of all locations at one screen.
- Requires only a LAN cable for connectivity.
- Notification and alerts of all type of protections.
- Automatic email generation on occurring of any type of alert e.g. battery voltage low or high, overload etc.

INTERFACE SOFTWARE

SU-KAM INTELLIQ ONLINE UPS COMMUNICATION SOFTWARE

The Su-Kam On-Line UPS Systems have an RS-232 Interface for the Power Manager. This user-friendly On-Line UPS Communication Software controls and monitors UPS performance and programs UPS commands. An easy- to-use software, it is based on the RS 232 world standard for interfacing Digital Signal Processor with computers. The Power Manager allows you to programme all the commands to be performed by it automatically. This software is very useful for communication systems including satellite systems, air traffic control systems, internet nodes, bank transactions and any other application requiring maximum reliability and high power availability such as computer labs, offices, biomedical instruments, telecommunication systems and industrial establishments. It ensures maximum safety for high-risk applications. Once the UPS is installed, the user need not worry about loss or corruption of valuable data, interruption, component failure, errors and shutdown of computers, drive & system crashes or any other damage, which would have occurred otherwise.

SALIENT FEATURES

- Constantly informs user the status of the UPS, whether locally or by sending messages to users connected to the network. Normally, the message contains information about output under voltage, output over voltage, battery voltage low or battery voltage high, if selected.
- Logs an important data containing input voltage, input frequency, output voltage, output frequency, output VA and battery voltage continuously to enable the user to check the performance at any time. Data logging enables the user to check the performance of UPS apart from knowing the status of the battery. Any future problem can be ascertained in case of any deviation in the performance
- Allows the user to shut down the network automatically without switching off each PC individually. Automatically saves the work that was being done regardless of the application that was being used. The user may define the shutdown procedure and can prioritise the shutdown of critical components within the system such as servers. This sequential and prioritised shutdown by Power Manager, in turn, protects the valuable data of the unsaved files of the computers connected with the system.
- Provides a standard control and monitoring capability, as it uses the TCP/IP communication protocol. It supports all operating systems such as Windows 98, 2000, ME, XP and NT. It also works fine on various Linux versions as Redhat, Debian, Slackware, Mandrake etc. It also provides the user with the added functionality of connecting himself to the UPS Systems situated in different locations by using either a dedicated network (intranet) or the Internet.

SOFTWARE FUNCTIONS

- **Graphical Monitoring of the UPS/Inverter status:** Easy to use powerful tool that allows monitoring and controlling the UPS systems. Input Voltage, Input Frequency, Output Voltage, Output Frequency, Battery Status, Load Status and Overload Status can be automatically monitored by it. There are graphical versions for both Windows and Linux.
- **Detailed Display of all the UPS/Inverter Data:** Provides on screen, all the data required to make an accurate and speedy diagnosis of the UPS/Inverter operation.
- **Alarm Notification via e-mail and SMS:** Can be configured to automatically notify an alarm via an e-mail or SMS message. In case of any critical error, it pops up the message on screen.
- **Programming the UPS/Inverter Commands:** The commands normally carried out by the users are programmed so that these are performed automatically e.g. shutting down and switching the server back on, UPS/Inverter battery test, etc.

POWER MANAGER

Monitoring Software (Single-Phase Online UPS) + S2E (Serial to Ethernet Card)

CD Content: CD comprises Single-Phase Online UPS+User Manual), S2E Card

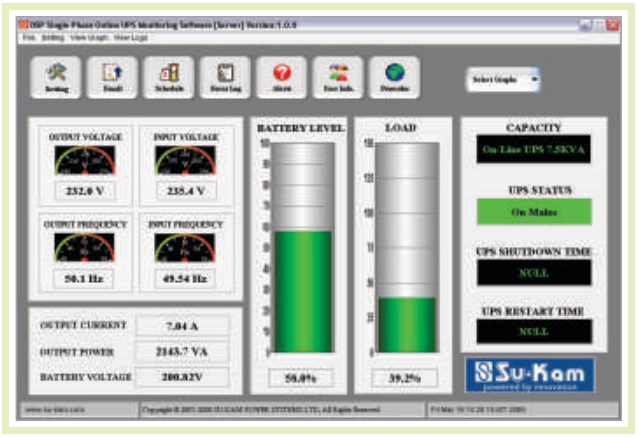
Single-Phase Online UPS can be monitored through S2E (Serial to Ethernet Card). S2E Card is useful, when Single-Phase Online UPS is to be monitored at a distant location within a intranet. S2E Card is designed to make data available within a network.

Note: S2E Card is available only with Single-Phase Online UPS

INSTRUCTIONS TO INSTALL via S2E CARD

- Connect the network cable to the LAN port of the S2E Card.
- Connect the S2E Card to the serial port of the UPS.

1 PHASE ONLINE UPS MONITORING SOFTWARE

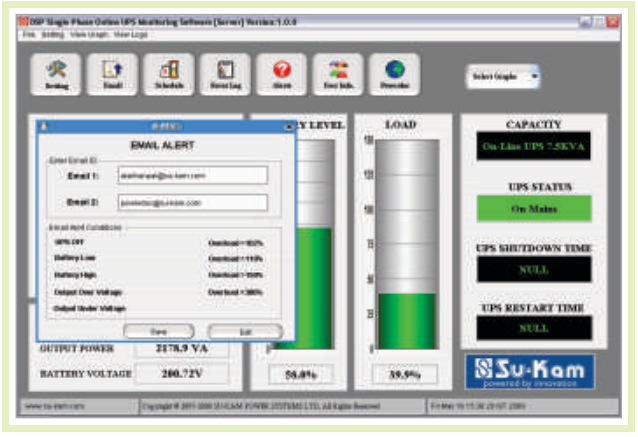


Main Panel : Power Manager provides live detailed information of UPS like Status, Battery Voltage, and Battery level, Input Voltage, Input Frequency, Output Voltage, Output Frequency, Output Current and Output Power. The Main panel is a graphical representation of the operational status of your system. Input and output voltage, input and output frequency is shown with the help of Analog meters. Battery Voltage and Load % are indicated with the help of Bar Graphs, besides output current, output power and UPS capacity setting.

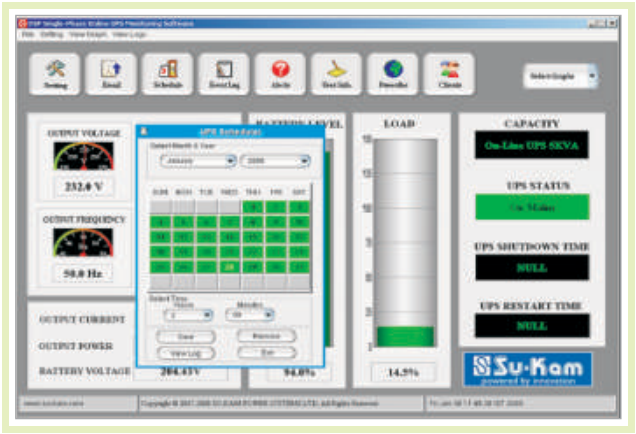
UPS Settings : Power Manager provides the way to set UPS Settings (like Battery Low, Battery High and Output Voltage).It provides flexibility in the sense that user can have control on UPS.

Power Manager provides three types of Settings

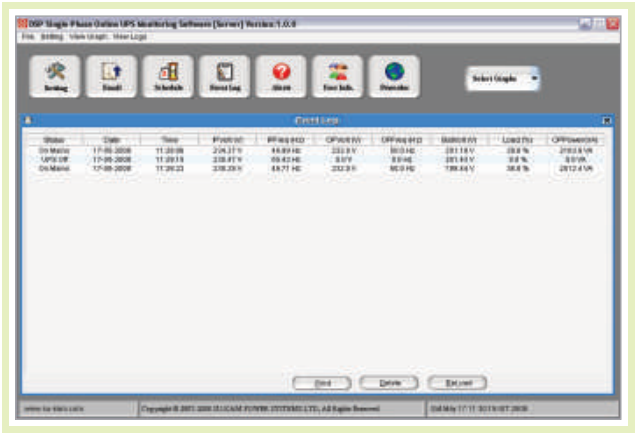
- Battery Low
- Battery High
- Output Voltage



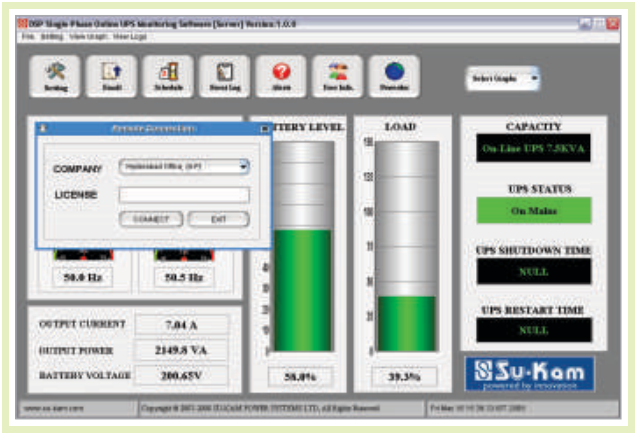
Email Notification : User can configure Power Manager to send Email Alert message up to 2 people when an Alert occur on various conditions like UPS OFF, Battery Low, Battery High, Output Over Voltage, Overload etc.



UPS Schedule : With Scheduler, user is able to schedule, shut down of all segments of UPS load at a specified time. It provides the flexibility to user, to have full control on UPS.



Event Log : View the current status of input voltage out put voltage & input - output frequency. It also gives you detail of battery status so that you online - any time, anywhere.



Connecting to Web Monitoring (POWER-DOC) : User is able to Monitor UPS on web (POWER-DOC). User has to request for Web Monitoring and then user is provided with appropriate Company name & License. User has to select Company Name and insert License provided by the Administrator to success-fully communicate with web.

View Graphs : User is provided with different Graphs: • Input Voltage, Output Voltage, Input Frequency, Output Frequency plotting vs. Time • Battery Voltage vs. Time • Load (%age) vs. Time.
User has dynamic graphs through which users would be able to even drag graphs to zoom at particular interval of Time.
I/P, O/P Voltage and I/P, O/P Frequency Vs Time

POWER NMS

Monitoring Software (Single-Phase Online UPS, 3-Phase Online UPS & 3-Phase Inverter) + RS-232 Cable

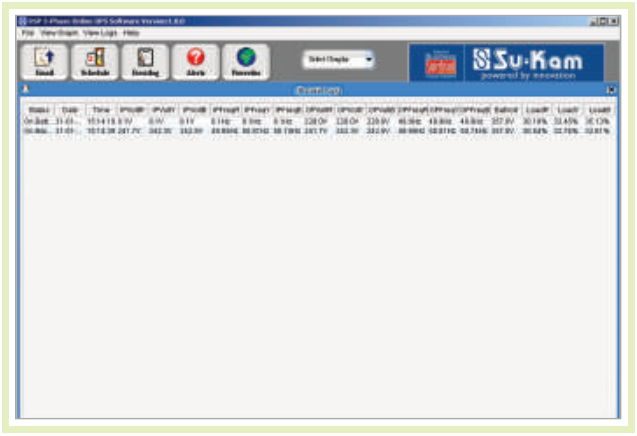
CD Content: CD comprises Single-Phase Online UPS, 3-Phase Online UPS& 3-Phase Inverter with respective user manual), RS-232 Cable or RS-232 serial port

Single-Phase Online UPS, 3-Phase Online UPS & 3-Phase Inverter can be monitored through RS-232 Cable as it's mentioned earlier.

INSTRUCTIONS TO INSTALL via RS-232 Cable/ RS-232 Serial Port

- Connect the male part of the RS-232 serial port to the serial port of the UPS/Inverter.
- Connect the female part of the RS-232 serial port to the serial port of the PC

3 PHASE ONLINE UPS MONITORING SOFTWARE



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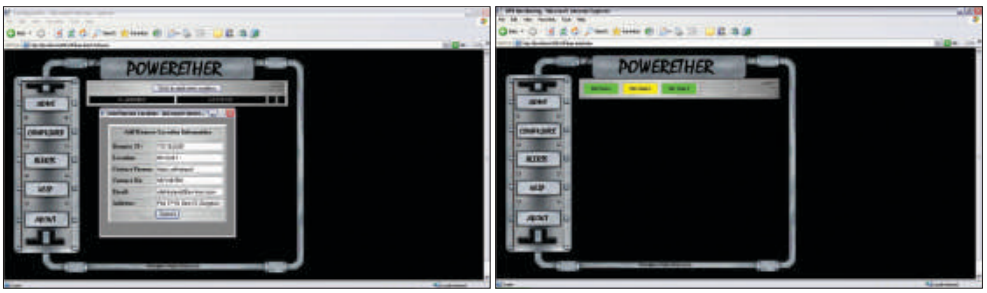
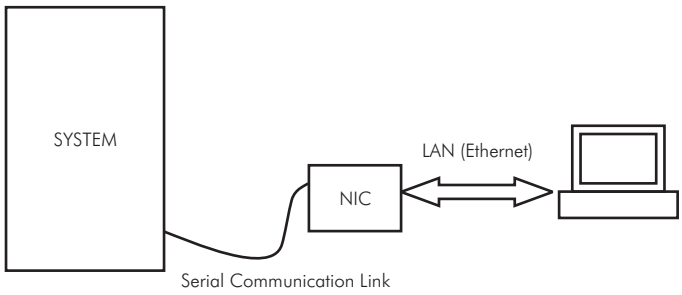
- Easy monitoring of all locations at one screen.
- No need of separate computer at each site.
- Requires only a LAN cable for connectivity.
- Notification and alerts of all type of protections.
- Information of all sites where you have installed the UPS e.g. contact person, contact no., Email id and address of that location.
- Automatic email generation on occurring of any type of alert e.g. battery voltage low or high, overload etc.

POWER ETHERNET BASED UPS MONITORING SOFTWARE



The Network Interface card

The network interface card has all the features to connect devices over an Ethernet network. The Block diagram shows how the NIC card is connected in a practical system. The system to be monitored is connected to the NIC through serial communication, it collects all the data from the system. The NIC is connected to the network through the Ethernet port once connected and powered on the user can access the system information by accessing the web page of the NIC on web browser by accessing the IP address of the NIC board. The NIC also logs the periodic data and alerts on the on board non volatile memory that the user can access later. It also sends the email alert notification to the configured email address in the email settings.



BLock Diagram of the System

Ethernet features on the NIC

Ethernet Features:

- IEEE 802.3 Compatible Ethernet Controller
- Fully Compatible with 10/100/1000Base-T Networks
- Integrated MAC and 10Base-T PHY
- 8-Kbyte Transmit/Receive Packet Buffer SRAM
- Supports One 10Base-T Port
- Programmable Automatic Retransmit on Collision
- Programmable Padding and CRC Generation
- Programmable Automatic Rejection of Erroneous Packets
- Activity Outputs for 2 LED Indicators

Buffer:

- Configurable transmit/receive buffer size
- Hardware-managed circular receive FIFO
- Byte-wide random and sequential access
- Internal DMA for fast memory copying
- Hardware assisted checksum calculation for various protocols

MAC:

- Support for Unicast, Multicast and Broadcast packets
- Programmable Pattern Match of up to 64 bytes within packet at user-defined offset
- Programmable wake-up on multiple packet formats

PHY:

- Wave shaping output filter

TCP/IP Stack Features

- Supported Protocols: ARP, IP, ICMP, UDP, TCP, DHCP, HTTP, FTP, TFTP
- Socket support for TCP and UDP
- NetBIOS Name Service
- DNS Domain Name System
- DHCP for LAN

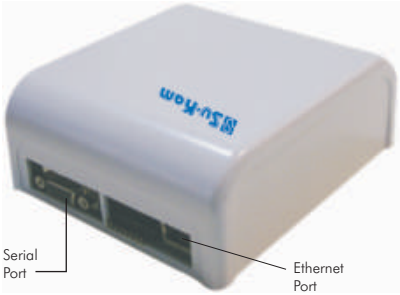
NIC SPECIFICATION

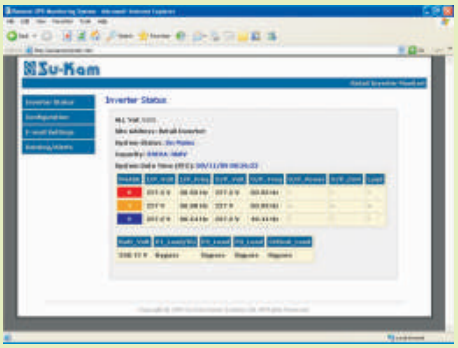
1	Input Voltage Range	9V to 18V DC, 1A
2	LED for activity Indication	One led
3	RTC	Real time clock for date time stamp with separate internal battery backup

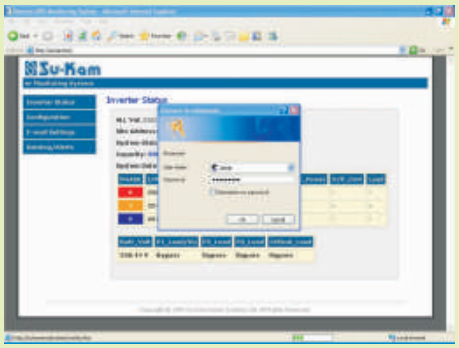
Communication Port

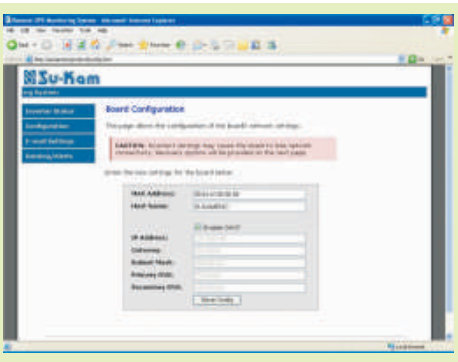
1	Ethernet port	Integrated MAC and 10Base-T PHY
2	Serial port	Factory programmable for communication with the System being monitored

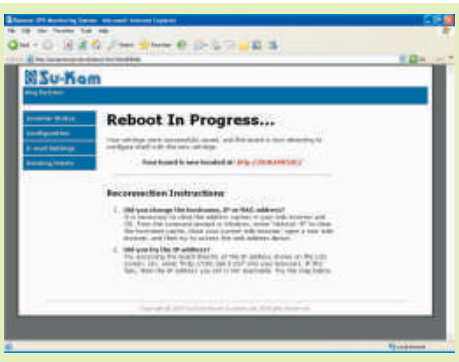

Power Supply
connector
(9V to 18V DC, 1A)
Activity LED
Reset Switch

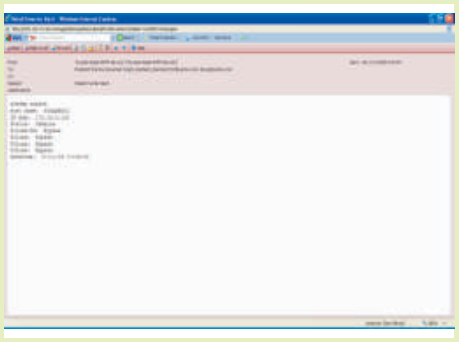

Serial
Port
Ethernet
Port

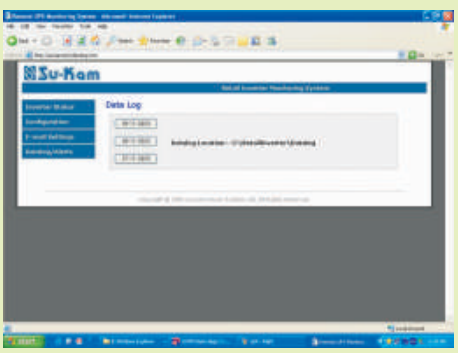


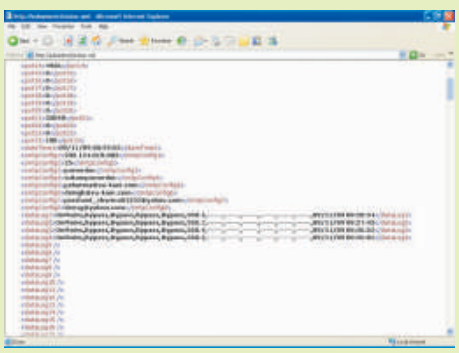





Reboot In Progress...







Government Of India
Copyright Office
Extract from the Register of Copyrights

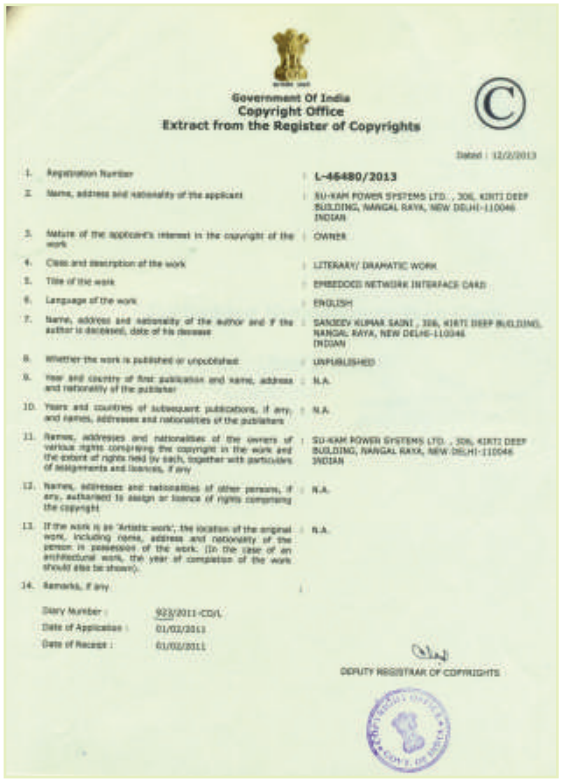
Dated : 15/1/2013

1.	Registration Number	L-46639/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	COMMUNICATION VALIDATOR
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 372/2011 CO/L
Date of Application : 16/01/2011
Date of Receipt : 17/01/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L-46639/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

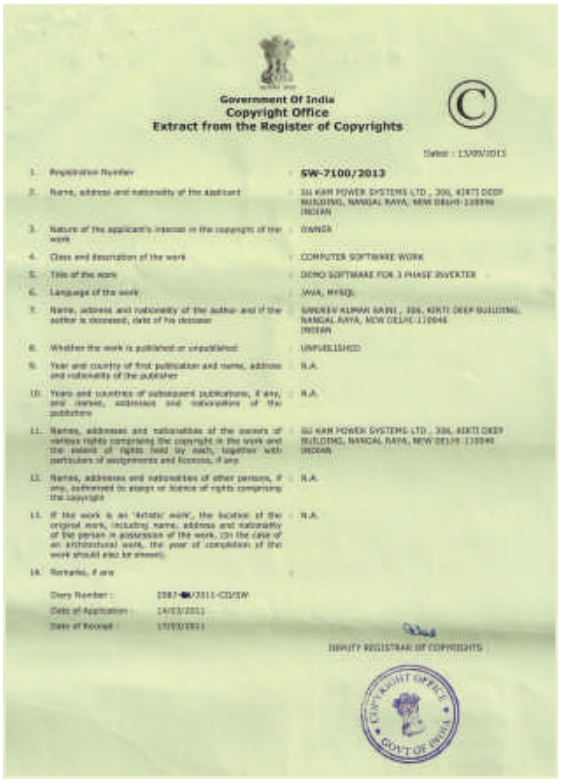
Dated : 12/2/2013

1.	Registration Number	L-46480/2013
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	LITERARY/ DRAMATIC WORK
5.	Title of the work	EMBEDDED NETWORK INTERFACE CARD
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 923/2011-CO/L
Date of Application : 01/02/2011
Date of Receipt : 01/02/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - L46480/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 13/03/2013

1.	Registration Number	SW-7100/2013
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	COMPUTER SOFTWARE WORK
5.	Title of the work	DEMO SOFTWARE FOR 3 PHASE INVERTER
6.	Language of the work	JAVA, MYSQL
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 2583/2011-CO/SW
Date of Application : 14/03/2011
Date of Receipt : 17/03/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - SW-7100/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 11/09/2013

1.	Registration Number	SW-7102/2013
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	COMPUTER SOFTWARE WORK
5.	Title of the work	STATIC BY PASS SWITCH (SINGLE PHASE)
6.	Language of the work	JAVA, MYSQL
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, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 2969/2013-CO/SW
Date of Application : 11/09/2013
Date of Receipt : 11/09/2013

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - SW-7102/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

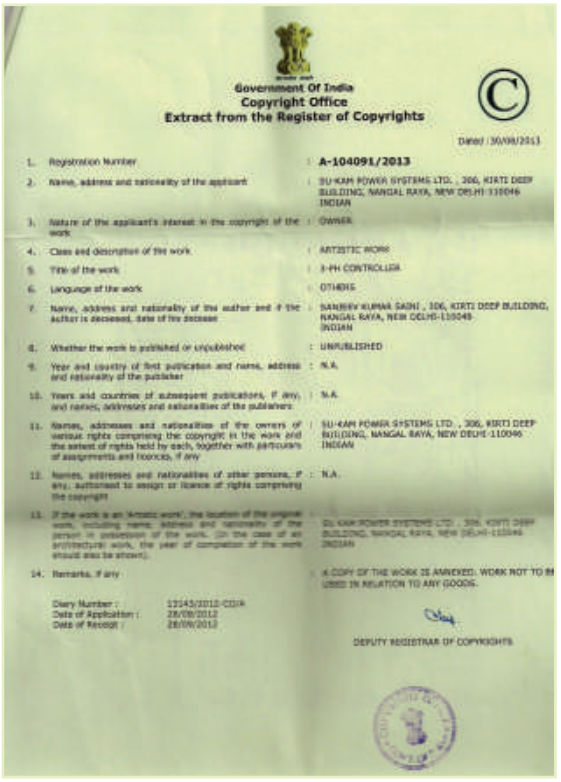
Dated : 13/09/2013

1.	Registration Number	SW-7105/2013
2.	Name, address and nationality of the applicant	SU KAM POWER SYSTEMS LTD., 306, KIRTI DEEP BUILDING, NANGAL RAYA, NEW DELHI INDIAN
3.	Nature of the applicant's interest in the copyright of the work	OWNER
4.	Class and description of the work	COMPUTER SOFTWARE WORK
5.	Title of the work	CUSTOMIZED SOFTWARE TO RUN DIFFERENT KILS AT DIFFERENT BATTERY PERCENTAGE
6.	Language of the work	JAVA, MYSQL
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 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 INDIAN
12.	Names, addresses and nationalities of other persons, if any, authorised to assign or licence 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).	N.A.
14.	Remarks, if any	

Diary Number : 2992/2011-CO/SW
Date of Application : 17/03/2011
Date of Receipt : 17/03/2011

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - SW-7105/2013



Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated : 30/08/2013

1.	Registration Number	A-104091/2013
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	3-PH CONTROLLER
6.	Language of the work	OTHERS
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, authorised to assign or licence 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 : 12143/2013-CO/A
Date of Application : 28/08/2013
Date of Receipt : 28/08/2013

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-104091/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated :14/1/201

1.	Registration Number	A-96052/2013
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	7.5/10 KVA - 360V (1AMP- 1AMP) ONLINE
6.	Language of the work	OTHERS
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, authorised to assign or licence 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 : 12391/2010-CO/A
Date of Application : 18/11/2010
Date of Receipt : 18/11/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-96052/2013

Government Of India
Copyright Office
Extract from the Register of Copyrights

Dated :14/1/2013

1.	Registration Number	A-96054/2013
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	25/30 KVA- 360V (3 AMP - 1 AMP) ONLINE UPS
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, authorised to assign or licence 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 : 12391/2010-CO/A
Date of Application : 18/11/2010
Date of Receipt : 18/11/2010

DEPUTY REGISTRAR OF COPYRIGHTS

Certificate - A-96054/2013

POWER ACCESSORIES

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
- De-gas Chamber
- Single Point Multi Feeder
- Clampless Tube

Benefits

- Cost Savings
- Safety From Burn
- Extended Battery Life & Performance
- Time Saving Convenience
- Install It And Forget It

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.

Stackable Trolley

Su-Kam Stackable Trolley is truly versatile in character.

- Is extremely lightweight and easy to install.
- Can be assembled and rearranged in any space.
- Is termite & temperature resistant.
- Is 100% waterproof. No absorption of moisture during the monsoon.
- Is mobile, can be shifted easily.
- Is available in soothing pastel shades.
- Stacks up neatly taking up less space.

ONLINE UPS SERIES
TRUSTY-MX

1 Phase In - 1 Phase Out

1KVA/36V to 10KVA/240V

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today. Most widely called as High Frequency UPS, but we call it “Triple Convention Online UPS.

This Series of UPS doesn't have Galvonic Transfer and this cost of product, warehousing, handling, transportation etc. Everything becomes affordable and helps you reach to the masses. This series provides a safe and breakfree power for your devices with very high efficiency and built in batteries.

This Series is capable to provide you a power factor very near to unity at input & output also.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 1KVA/36V (Internal Batteries)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 1KVA/36V (Internal Batteries)				
Load Options	A	B	C	D
Computer	2	-	1	1
Printer	1	-	-	1
LCD TV 32”	-	1	-	-
CFL	-	6	2	1
Server	-	-	1	-
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
7 AH	20 Mins.	50 Mins.	15 Mins.	30 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	1000
CAPACITY VA / W	1000VA/800W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>93%
BATTERY	
Numbers of Batteries	3
Battery Type	12V/7Ah
Backup Time (Full Load)	> 5 minutes
Recharge Time	5 hours to 90%
Charging Current	1A
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	145 x 220 x 400
WEIGHT	
Kgs	13
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 1KVA/36V (Long Backup)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 1KVA/36V (Long Backup)				
Load Options	A	B	C	D
Computer	2	-	1	1
Printer	1	-	-	1
LCD TV 32”	-	1	-	-
CFL	-	6	2	1
Server	-	-	1	-
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	4 Hrs. 30 Mins.	12 Hrs. 40 Mins.	4 Hrs.	6 Hrs.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	1000 XL
CAPACITY VA / W	1000VA/800W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>93%
BATTERY	
Numbers of Batteries	Depending
Battery Type	upon the
Backup Time (Full Load)	capacity of
Recharge Time	external batteries
Charging Current	8A
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	145 x 220 x 400
WEIGHT	
Kgs	9
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 2KVA/96V (Internal Batteries)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

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Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 2KVA/96V (Internal Batteries)				
Load Options	A	B	C	D
Computer	6	-	2	2
Printer	2	-	-	1
LCD TV 32”	-	8	-	-
CFL	-	8	10	5
Server	-	-	1	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
7 AH	30 Mins.	35 Mins.	45 Mins.	40 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	2000
CAPACITY VA / W	2000VA/1600W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>94%
BATTERY	
Numbers of Batteries	8
Battery Type	12V/7Ah
Backup Time (Full Load)	> 9 minutes
Recharge Time	5 hours to 90%
Charging Current	1A
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	192 x 347 x 460
WEIGHT	
Kgs	31
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 2KVA/96V (Long Backup)

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Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
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- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 2KVA/96V (Long Backup)				
Load Options	A	B	C	D
Computer	6	-	2	2
Printer	2	-	-	1
LCD TV 32”	-	8	-	-
CFL	-	8	10	5
Server	-	-	1	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	4 Hrs. 40 Mins.	5 Hrs.	8 Hrs. 40 Mins.	6 Hrs. 40 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	2000XL
CAPACITY VA / W	2000VA/1600W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>94%
BATTERY	
Numbers of Batteries	Depending
Battery Type	upon the
Backup Time (Full Load)	capacity of
Recharge Time	external batteries
Charging Current	8A/12A optional
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	192 x 347 x 460
WEIGHT	
Kgs	13
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 3KVA/96V (Internal Batteries)

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Product Features

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- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
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- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 3KVA/96V (Internal Batteries)				
Load Options	A	B	C	D
Computer	7	-	3	4
Printer	1	-	-	1
LCD TV 32”	-	10	-	-
CFL	10	10	5	8
Server	-	-	2	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
7 AH	30 Mins.	20 Mins.	25 Mins.	30 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	3000
CAPACITY VA / W	3000VA/2400W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>94%
BATTERY	
Numbers of Batteries	8
Battery Type	12V/7Ah
Backup Time (Full Load)	> 9 minutes
Recharge Time	5 hours to 90%
Charging Current	1A
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	192 x 347 x 460
WEIGHT	
Kgs	31
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 3KVA/96V (Long Backup)

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Product Features

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- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
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- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 3KVA/96V (Long Backup)				
Load Options	A	B	C	D
Computer	7	-	3	4
Printer	1	-	-	1
LCD TV 32”	-	10	-	-
CFL	10	10	5	8
Server	-	-	2	1
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	4 Hrs. 40 Mins.	4 Hrs.	4 Hrs. 50 Mins.	4 Hrs. 40 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	3000XL
CAPACITY VA / W	3000VA/2400W
INPUT	
Voltage Range	110 ~ 300VAC Depends on load Level
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% with Full load
Power Factor	≥0.99
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	± 2%
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.2 Hz
Harmonic Distortion	≤3% @ Linear Load
	≤5% @ Non-Linear Load
Current Crust Ratio	3:1
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	1min @105% ~ 110% load
	30s @ 110% ~ 120% load
Over Load Capacity BAT mode	10s @ 125% ~ 150% load
	1s @ >150% load"
EFFICIENCY	
Line Mode	>88%
BAT Mode	>85%
ECO Mode	>94%
BATTERY	
Numbers of Batteries	Depending
Battery Type	upon the
Backup Time (Full Load)	capacity of
Recharge Time	external batteries
Charging Current	8A/12A optional
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	<4ms
INV --> ECO	<4ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	192 x 347 x 460
WEIGHT	
Kgs	13
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	20-90% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB	Software supports Windows 98/NT/2000/XP/2003/ME, Linux, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 6KVA/240V (Internal Batteries)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

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Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 6KVA/240V (Internal Batteries)				
Load Options	A	B	C	D
Computer	10	-	5	4
Printer	2	-	-	1
LCD TV 32”	-	15	-	-
CFL	15	15	10	6
Server	-	-	3	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
7 AH	45 Mins.	40 Mins.	50 Mins.	55 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	6000
CAPACITY VA / W	6000VA/5400W
INPUT	
Adjustable Input Voltage	110 ~ 276VAC
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% @ R Full Load
Power Factor	0.99
OUTPUT	
Voltage	208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 +/- 0.05 Hz
Harmonic Distortion	2% @ Linear Load
	5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	2 min @ 105% ~ 125%
Over Load Capacity BAT mode	30 sec @ 125% ~ 150%
	1 sec @ 150% ~ 150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>92% @ Full Load and Battery Fully Charged
BAT Mode	>92% @ Full Load and 12Vdc/Battery
ECO Mode	>96% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	20
Battery Type	12V/7Ah
Backup Time (Full Load)	> 5 minutes
Recharge Time	5 hours to 90%
Charging Current	1.2A
Rated Battery Voltage	240VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	260 x 708 x 550
WEIGHT	
Kgs	80
ENVIRONMENT	
Operating Environment	0-40° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix, Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Energemcy Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 6KVA/240V (Long Backup)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

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Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 6KVA/240V (Long Backup)				
Load Options	A	B	C	D
Computer	10	-	5	4
Printer	2	-	-	1
LCD TV 32”	-	15	-	-
CFL	15	15	10	6
Server	-	-	3	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	8 Hrs. 10 Mins.	6 Hrs.	8 Hrs. 30 Mins.	10 Hrs. 40 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	6000 XL
CAPACITY VA / W	6000VA/5400W
INPUT	
Adjustable Input Voltage	110 ~ 276VAC
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% @ R Full Load
Power Factor	0.99
OUTPUT	
Voltage	208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 +/- 0.05 Hz
Harmonic Distortion	2% @ Linear Load
	5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	2 min @ 105% ~ 125%
Over Load Capacity BAT mode	30 sec @ 125% ~ 150%
	1 sec @ 150% ~ 150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>92% @ Full Load and Battery Fully Charged
BAT Mode	>92% @ Full Load and 12Vdc/Battery
ECO Mode	>96% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	Depending
Battery Type	upon the
Backup Time (Full Load)	capacity of
Recharge Time	external Batteries
Charging Current	4.0A
Rated Battery Voltage	240VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	260 x 708 x 550
WEIGHT	
Kgs	25.5
ENVIRONMENT	
Operating Environment	0-40° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix, Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Energemcy Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 10KVA/240V (Internal Batteries)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 10KVA/240V (Internal Batteries)				
Load Options	A	B	C	D
Computer	20	-	10	8
Printer	2	-	-	2
LCD TV 32”	-	20	-	-
CFL	20	25	20	20
Server	-	-	5	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
7 AH	30 Mins.	35 Mins.	25 Mins.	20 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	10K
CAPACITY VA / W	1000VA/9000W
INPUT	
Adjustable Input Voltage	110 ~ 276VAC
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% @ R Full Load
Power Factor	0.99
OUTPUT	
Voltage	208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 +/- 0.05 Hz
Harmonic Distortion	2% @ Linear Load
	5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	2 min @ 105% ~ 125%
Over Load Capacity BAT mode	30 sec @ 125% ~ 150%
	1 sec @ 150% ~ 150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>92% @ Full Load and Battery Fully Charged
BAT Mode	>92% @ Full Load and 12Vdc/Battery
ECO Mode	>96% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	20
Battery Type	12V/9Ah
Backup Time (Full Load)	> 9 minutes
Recharge Time	5 hours to 90%
Charging Current	1.2A
Rated Battery Voltage	240VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	260 x 708 x 550
WEIGHT	
Kgs	84
ENVIRONMENT	
Operating Environment	0-40° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix, Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Energemcy Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 10KVA/240V (Long Backup)

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 10KVA/240V (Long Backup)				
Load Options	A	B	C	D
Computer	20	-	10	8
Printer	2	-	-	2
LCD TV 32”	-	20	-	-
CFL	20	25	20	20
Server	-	-	5	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
100 AH	4 Hrs. 20 Mins.	5 Hrs.	4 Hrs.	3 Hrs. 40 Mins.

Trusty Online UPS Series

1 Phase In - 1 Phase Out

Technical Specifications

Model	10K-XL
CAPACITY VA / W	1000VA/9000W
INPUT	
Adjustable Input Voltage	110 ~ 276VAC
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Single phase with ground
THDI	< 5% @ R Full Load
Power Factor	0.99
OUTPUT	
Voltage	208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 +/- 0.05 Hz
Harmonic Distortion	2% @ Linear Load
	5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	2 min @ 105% ~ 125%
Over Load Capacity BAT mode	30 sec @ 125% ~ 150%
	1 sec @ 150% ~ 150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>92% @ Full Load and Battery Fully Charged
BAT Mode	>92% @ Full Load and 12Vdc/Battery
ECO Mode	>96% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	Depending
Battery Type	upon the
Backup Time (Full Load)	capacity of
Recharge Time	external Batteries
Charging Current	4.0A
Rated Battery Voltage	240VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode / Fault
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	260 x 708 x 550
WEIGHT	
Kgs	29.5
ENVIRONMENT	
Operating Environment	0-40° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix, Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Energemcy Power Off

Specifications are subject to change without prior notice.

ONLINE UPS SERIES
TRUSTY-MX

3 Phase In - 1 Phase Out

10KVA/288VDC, 20KVA/288VDC

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today. Most widely called as High Frequency UPS, but we call it “Triple Convention Online UPS.

This Series of UPS doesn't have Galvonic Transfer and this cost of product, warehousing, handling, transportation etc. Everything becomes affordable and helps you reach to the masses. This series provides a safe and breakfree power for your devices with very high efficiency and built in batteries.

This Series is capable to provide you a power factor very near to unity at input & output also.

Trusty Online UPS Series

3 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 10KVA/288VDC

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 10KVA/288VDC				
Load Options	A	B	C	D
Computer	20	-	10	8
Printer	2	-	-	2
LCD TV 32”	-	20	-	-
CFL	20	25	20	20
Server	-	-	5	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
65 AH	3 Hrs. 20 Mins.	3 Hrs. 50 Mins.	3 Hrs.	2 Hrs. 50 Mins.

Trusty Online UPS Series

3 Phase In - 1 Phase Out

Technical Specifications

Model	3/1 - 10K
CAPACITYVA / W	10000VA/9000W
INPUT	
Adjustable Input Voltage	190VAC-478VAC Depends on Load Level
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Three phase with ground
THDI	< 5% with R Full load
Power Factor	0.99 @ R Full load
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.05 Hz
Harmonic Distortion	2% @ Linear Load 5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	5min @100% ~ 110% load
	1min @ 110% ~ 130% load
Over Load Capacity BAT mode	10s @ 130% ~ 150% load
	2s @ >150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>93% @ Full Load and Battery Fully Charged
BAT Mode	>93% @ Full Load and 12Vdc/Battery
ECO Mode	>97% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	24 pcs
Battery Type	12V
Charging Current	4A (Expandable)
Rated Battery Voltage	288VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	350 x 890 x 650
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix,
	Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

Trusty Online UPS Series

3 Phase In - 1 Phase Out

RS232
Communication Port

LCD DISPLAY PANEL

TRUSTY SERIES - 20KVA/288VDC

When the load is not very critical or has got the capacity to handle same thing of its own, then we have got a separate Technology today.

Most widely called as DSP High Frequency UPS, but we call it “Triple Convention Online” UPS.

This Series of UPS doesn't have Galvanic Transfer and this cost of product, warehousing, handling, transportation etc.

Everything becomes affordable and helps you reach to the masses.

This series provides a safe and break free power for your devices with very high efficiency and built in or external batteries.

Principle: The Su-Kam Trusty On-Line UPS System totally isolates its connected load from every power problem that area from the main supply. It ensures constant output irrespective of change in input voltage or frequency.

Product Features

- Digital Signal controller/DSP based High frequency design using latest IGBT guarantees high reliability.
- SMPS Based Pure DC Charger with extended power resulting in extended battery life and lower maintenance cost.
- Triple Conversion Voltage and Frequency Independent technology.
- Noiseless operation.
- Extra wide Input voltage Window range, minimizing battery power usage and enhancing battery utilization & life.
- Heavy duty charger for long backups.
- User friendly LCD display.
- Multiple protection features to ensure load safety.

Applications

- IT Infrastructure-High Density Racks
- Industrial & Manufacturing
- Medical Applications
- Networking Equipment's
- Pharmaceuticals
- Chemical Processing
- Process Control Equipment and Security Systems
- Automated Teller Machines

Electronic Protection Updates

- Auto Self-Testing System
- Inbuilt Static Bypass
- Overload Short Circuit Protection

Displays

- Multifunction LCD display
- Multiple selection Switches

LOAD CHART, APPLICATIONS & BACK-UP TIME

TRUSTY 20KVA/288VDC				
Load Options	A	B	C	D
Computer	40	-	20	15
Printer	10	-	-	4
LCD TV 32”	-	40	-	-
CFL	10	60	35	30
Server	-	-	10	5
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
65 AH	1 Hrs.	1 Hrs. 30 Mins.	1 Hrs. 10 Mins.	1 Hrs. 40 Mins.

Trusty Online UPS Series

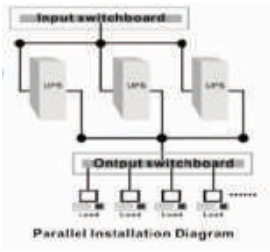
3 Phase In - 1 Phase Out

Technical Specifications

Model	3/1 - 20K Combo
CAPACITYVA / W	20000VA/18000W
INPUT	
Adjustable Input Voltage	110VAC-276VAC Depends on Load Level For Single Phase Input
	190VAC-478VAC Depends on Load Level For Three Phase Input
Adjustable By Pass Voltage	110 ~ 276VAC
Frequency Range	45Hz ~ 55Hz / 54Hz ~ 66Hz
Phase	Three phase with ground
THDI	< 5% with R Full load
Power Factor	0.99 @ R Full load
OUTPUT	
Voltage	200/208/220/230/240VAC
Voltage Regulation	<1%
Current Crest Ratio	3:1
Frequency (Synchronized Range)	45Hz ~ 55Hz / 54Hz ~ 66Hz
Frequency (Battery Mode)	50/60 ± 0.05 Hz
Harmonic Distortion	2% @ Linear Load 5% @ Non-Linear Load
Output Waveform	Pure Sine Wave
Over Load Capacity line mode	5min @100% ~ 110% load
	1min @ 110% ~ 130% load
Over Load Capacity BAT mode	10s @ 130% ~ 150% load
	2s @ >150% load
Parallel	upto 4
EFFICIENCY	
Line Mode	>93% @ Full Load and Battery Fully Charged
BAT Mode	>93% @ Full Load and 12Vdc/Battery
ECO Mode	>97% @ Full Load and Battery Fully Charged
BATTERY	
Numbers of Batteries	24 pcs
Battery Type	12V
Charging Current	4A (Expandable)
Rated Battery Voltage	288VDC
TRANSFER TIME	
BAT <--> LINE	0ms
INV <--> BYPASS	0ms
ECO --> INV	<10ms
INDICATOR	
LCD	Load Level / Battery Level / Battery Mode / AC Mode / Bypass Mode
AUDIBLE ALARM	
Battery Mode	Sounding every 4 seconds
Low Battery	Sounding every second
Fault	Continuously Sounding
Overload	Sounding twice every second
DIMENSION	
Tower Case (WxHxD)mm	350 x 890 x 650
ENVIRONMENT	
Operating Environment	0-45° C
Relative Humidity	0-95% (NON-CONDENSING)
Noise Level	<50dB @ 1 Meter
INTERFACE	
USB/RS232	Software supports Windows Family, Linux, Sun Solaris, IBM Aix,
	Compaq True64, SGI IRIX, FreeBSD, HP-UX, and MAC
External Slot	SNMP/AS400/Relay Card
EPO	Emergency Power Off

Specifications are subject to change without prior notice.

TECHNOLOGY ADVANTAGES

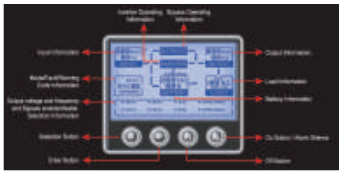


N+X Parallel Redundancy

The parallel redundancy feature is available for high level 6 KVA to 20 KVA models. Comparing to current 1+1 parallel redundancy architecture technology in the market, Su-Kam N+X parallel redundancy architecture technology can even achieve the saving of purchasing an extra UPS with corresponding backup rating. This feature benefits on the reducing the cost on your IT equipment investment.

Auto Self- Testing System

When turning on the Trusty UPS system, it immediately performs an inspection of the components such as the inverter, the battery, and the load. The system will also detect any problems in time to avoid causing any damage to the system.



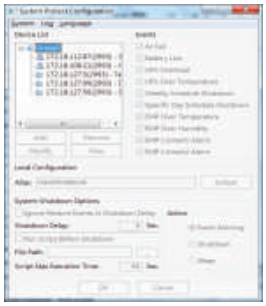
SNMP Card

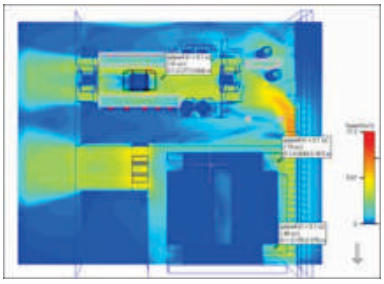
NMC SNMP is a UPS monitoring accessory to link UPS via Ethernet which provides access information and configuration for the UPS.

NMC comes with an application program which named SPS (System Protect Software) for multi-servers (OS) shutdown purpose.

Features

- UPS Management and Configuration through Ethernet by SNMP Protocol
- Standard MIB (RFC1628.mib) Compatible
- Record Logs for Analysis
- Support Http/Https - Web browser
- Warning Notification via E-mail
- Support SNMPv1/SNMPv2c/SNMPv3 Protocols
- Support Multi-OS Shutdown by SPS
- Support Shutdown in VMware by SPS



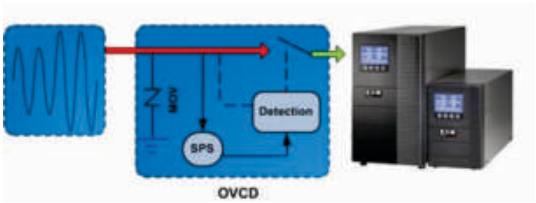


Robust and Smart Thermal Management

- Robust design enables Trust-MX Series working in extremely harsh physical environment. Big thermal and electrical margin
- Smart thermal management and protection
- 0 – 45 degree for 1 – 3 kVA
- Suitable for all kinds of Load
- 0.5 Lagging -1
- PFC/RCD
- IT devices/computer/printer

User Selectable Output Voltage

Trusty enables users to select corresponding output voltage to the local mains power without changing hardware. User can select output voltage by just pushing a button.



Internal Over Voltage Cut-off Device (OVCD)

- Internal over voltage cutoff device provide a solid shell for UPS, isolate the UPS from being damaged by high voltage
- Input components are all safe
- Suitable for all kinds of Load
- 0.5 Lagging -1
- PFC/RCD
- IT devices/computer/printer

Communication Port

Trusty offers three different communication ports for the user selection : RS-232, USB card, SNMP card and AS-400 card. Through either one of them, the user can control and monitor UPS status easily.

TELECOM PRODUCTS

1 Phase In - 1 Phase Out

10KVA/240V

3 Phase In - 3 Phase Out

15KVA/360V

Su-Kam Telecom inverter is most reliable Power Back-up System for for Telecom Towers. Pure Sine Wave protection ensures that there is no hindrance in network due to power outage. The primary advantage of this Inverter is the huge savings in operational cost as compared to old-fashioned generators. What's more – the site becomes free from pollution – be it noise air. The Inverter is also backed by 'Remote Monitoring Software' making it easy to monitor and control the operations through net.

Telecom Inverter

1 Phase In - 1 Phase Out

LCD MESSAGES

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS ...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 7.5KVA-120V DC	H/W REV.: 1.2.01 S/W REV.: 12.07.7	SERVICE: support@ su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [ ]	O/P LOAD: 87% [ ]

TELECOM INVERTER - 10KVA/240V

Designed for Telecom Sites

Su-Kam Telecom inverter is most reliable Power Back-up System for for Telecom Towers. Pure Sine Wave protection ensures that there is no hindrance in network due to power outage. The primary advantage of this Inverter is the huge savings in operational cost as compared to old-fashioned generators. What's more – the site becomes free from pollution – be it noise air. The Inverter is also backed by 'Remote Monitoring Software' making it easy to monitor and control the operations through net.

Product Features

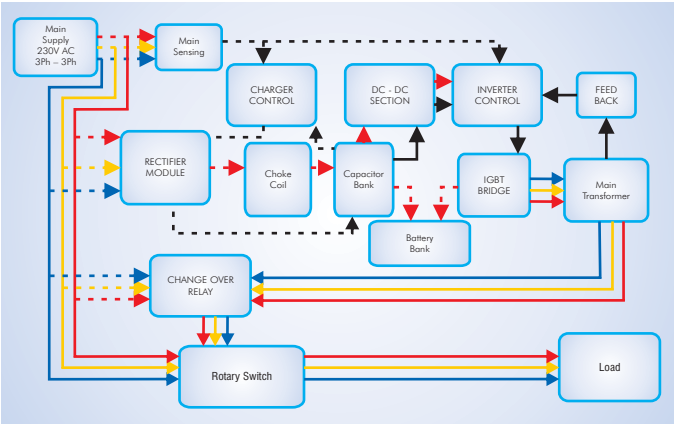
- DSP based PWM technology using IGBT.
- Complete Inverter Control by DSP.
- Fully regulated sine Wave output with THD <3%.
- Constant Voltage and Frequency even on unbalanced loads.
- Inverter Efficiency >92%.
- High Overload Handling capability, 200% for 5 sec, 300% for 2 sec.
- Interface the inverter with computer through RS-232 port.
- No humming noise from any load.
- High temperature warning and over Temperature, hence enhanced life.
- Temperature controlled Blower Operation, hence enhanced life.
- Battery Charging even if 2 phases available or all 3 phases low upto 140V (Works like an Online)
- Silent Operation.
- Great Power Saving as compared to Generators.
- Remote monitoring, analysis & control using Power Doc software.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- 20 x 4 lines LCD panel to display inverter parameters.



LOAD CHART, APPLICATIONS & BACK-UP TIME

TELECOM INVERTER 10KVA/240V				
Load Options	A	B	C	D
TV 19-21"	-	7	2	2
Room Cooler	-	-	4	4
Tube Light 40W	40	25	20	15
Fan 48 MM	40	25	20	15
CFL 11W	40	25	20	10
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH	2 Hrs. 45 Mins	4 Hrs.	4 Hrs. 40 Mins.	3 Hrs. 25 Min.s
180 AH	4 Hrs.	5 Hrs. 45 Mins.	6 Hrs. 40 Mins.	4 Hrs. 45 Mins.

Telecom Inverter

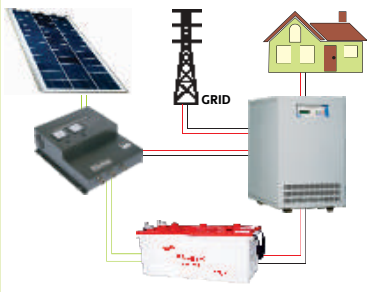
1 Phase In - 1 Phase Out

Technical Specifications

Series	DSP based Pure Sine Wave Inverter
Rating	10 KVA/240V
Technology	DSP based with IGBT & PWM Pure Sine Wave Inverter
Model	CL1110K
INPUT PARAMETERS	
Input Supply	1 Phase, 3 Wire
Voltage Range	140-280V AC
Frequency Range	43-57 Hz
OUTPUT PARAMETERS	
Power Factor	0.8
Voltage Regulation	220 V ± 1%
Frequency Regulation	50 Hz ± 0.05 Hz
Peak Efficiency	>92%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<3%
Crest Factor	>3:1
Transient Response	Recovery to ± 5% within 1.5 cycles
Overload Handling Capacity	105% for 6 mins, 160% for 6 secs
BATTERY PARAMETERS	
Battery Voltage	240V DC
Battery Rating	12V/200AH
Battery Make	Su-Kam make Sealed Maintenance Free Batteries
Weights (in Kgs)	60
Battery Bank Cabinet Dimension	1500mm x 1200mm x 1700mm (LxWxH)
Total Weight (Battery+Cabinet)	2000Kg
Battery Charging Current	5A ± 0.5A to 20A ± 0.5A
ENVIRONMENTAL PARAMETERS	
Operating Temperature	0 - 45° C
Acoustic Noise (at 1 mts)	<55dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indication & Alarm	Backlit 16x2 Lines LCD Screen with indication & alarms
Protection Class	IP - 20
Dimension WxDxH (in mm)	350x550x625
Manual Bypass switch	Provided
PFC Contacts	Mains Fail
	Inverter ON

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 10000Wp. maximum, Battery 12Vx20

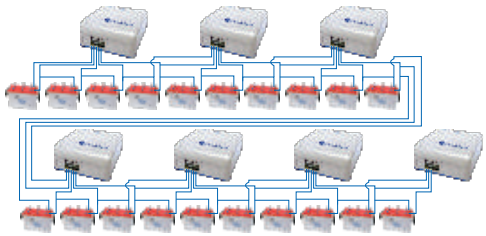
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

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.



Telecom Inverter

3 Phase In - 3 Phase Out

LCD MESSAGES

SU-KAM WELCOMES YOU	SELF TEST IN PROGRESS ...	AUTO CALIBRATION PASS	DSP TEST: O.K
SYSTEM CAPACITY 7.5KVA-120V DC	H/W REV.: 1.2.01 S/W REV.: 12.07.7	SERVICE: support@ su-kam.com	MAINS ON BATTERY CHARGING
I/P VOLT: 228.7 V I/P FREQ: 50.1 Hz	BATT. LEVEL: 83% BATTERY CHARGING	BATT. LEVEL: 51% [ ]	O/P LOAD: 87% [ ]

TELECOM INVERTER - 15KVA/360V

Designed for Telecom Sites

Su-Kam Telecom inverter is most reliable Power Back-up System for for Telecom Towers. Pure Sine Wave protection ensures that there is no hindrance in network due to power outage. The primary advantage of this Inverter is the huge savings in operational cost as compared to old-fashioned generators. What's more – the site becomes free from pollution – be it noise air. The Inverter is also backed by 'Remote Monitoring Software' making it easy to monitor and control the operations through net.

Product Features

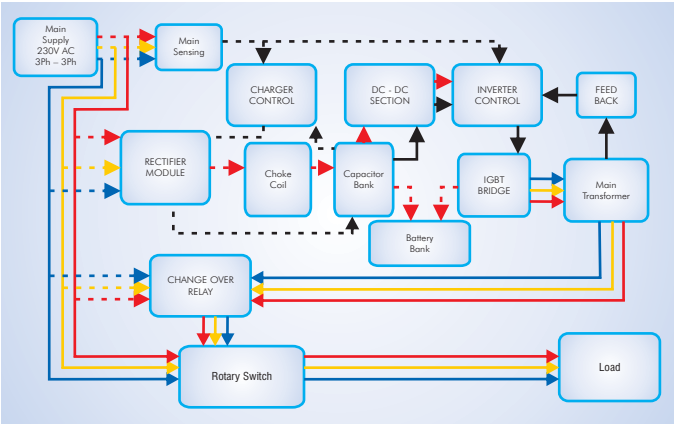
- DSP based PWM technology using IGBT.
- Complete Inverter Control by DSP.
- Fully regulated sine Wave output with THD <3%.
- Constant Voltage and Frequency even on unbalanced loads.
- Inverter Efficiency >92%.
- High Overload Handling capability, 200% for 5 sec, 300% for 2 sec.
- Interface the inverter with computer through RS-232 port.
- No humming noise from any load.
- High temperature warning and over Temperature, hence enhanced life.
- Temperature controlled Blower Operation, hence enhanced life.
- Battery Charging even if 2 phases available or all 3 phases low upto 140V (Works like an Online)
- Silent Operation.
- Great Power Saving as compared to Generators.
- Remote monitoring, analysis & control using Power Doc software.

Electronic Protection Updates

- Software Controlled Double Protection for Overload and Short Circuit
- Battery deep discharge protection

Displays

- 20 x 4 lines LCD panel to display inverter parameters.



LOAD CHART, APPLICATIONS & BACK-UP TIME

TELECOM INVERTER 15KVA/360V				
Load Options	A	B	C	D
TV 19-21"	-	10	4	2
Room Cooler	-	-	6	4
Tube Light 40W	50	40	30	20
Fan 48 MM	50	40	30	20
CFL 11W	50	40	30	15
AC 1.5 T	-	-	-	2
Back-Up Time in Hrs. (approx.). (Below backup time is calculated on above load options A, B, C & D)				
135 AH (30 Nos.)	3 Hrs. 30 Mins.	3 Hrs. 50 Mins.	4 Hrs. 30 Mins.	4 Hrs. 40 Mins.
180 AH (30 Nos.)	5 Hrs.	5 Hrs. 20 Mins.	6 Hrs. 20 Mins.	6 Hrs. 45 Mins.

Telecom Inverter

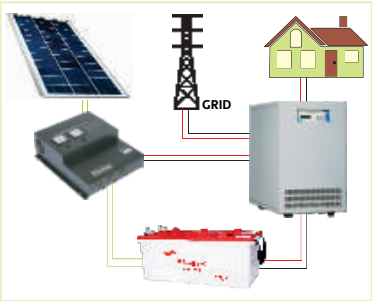
3Phase In - 3 Phase Out

Technical Specifications

Series	DSP based Pure Sine Wave Inverter
Rating	15 KVA/360V
Technology	DSP based with IGBT & PWM Pure Sine Wave Inverter
Model	CL3315K
INPUT PARAMETERS	
Input Supply	3 Phase, 4 Wire
Voltage Range	280-465V AC
Frequency Range	43-57 Hz
OUTPUT PARAMETERS	
Power Factor	0.8
Voltage Regulation	220 V ± 1%(L-N), 380V ± 1%(L-L)
Frequency Regulation	50 Hz ± 0.05 Hz
Peak Efficiency	>92%
Output Waveform	Pure Sine Wave
Total Harmonic Distortion	<3%
Crest Factor	>4:1
Transient Response	Recovery to ± 5% within 1.5 cycles
Overload Handling Capacity	110% for 8 mins, 150% for 15 secs, 200% for 4 secs, 300% for 2 secs
BATTERY PARAMETERS	
Battery Voltage	360V DC
Battery Rating	12V/200AH
Battery Make	Su-Kam make Sealed Maintenance Free Batteries
Weights (in Kgs)	60
Battery Bank Cabinet Dimension	1500mm x 1200mm x 1700mm (LxWxH)
Total Weight (Battery+Cabinet)	2000Kg
Battery Charging Current	10A ± 0.5A to 20A ± 0.5A
ENVIRONMENTAL PARAMETERS	
Operating Temperature	0 - 45° C
Acoustic Noise (at 1 mts)	<55dB
Relative Humidity	Max 95% non-condensing
OTHERS	
Indication & Alarm	Backlit 20x4 Lines LCD Screen with indication & alarms
Protection Class	IP - 20
Dimension WxDxH (in mm)	450x750x700
Manual Bypass switch	Provided
PFC Contacts	Mains Fail
	Inverter ON

Specifications are subject to change without prior notice.

POWER ACCESSORIES



Panel Range: 15000Wp. maximum, Battery 12Vx30

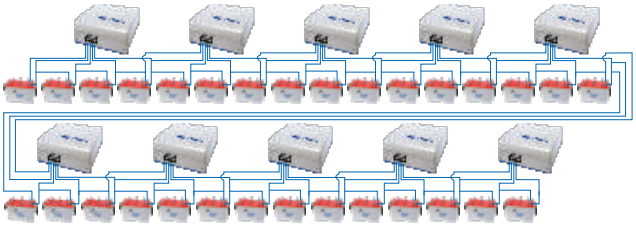
Solar Conversion Kit

A high capacity inverter can now be converted into a solar high capacity system. This can be achieved by connecting a solar charge controller to a high capacity inverter which is subjected to some changes in its system configuration that allows first preference to charging by solar power.

The combination of the high capacity inverter (after some changes in its system configuration) and the solar charge controller, now utilizes both solar and grid for charging with the first preference given to solar. It also 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. 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.

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.



Tower Management System

An Integrated, State-of-art offering by Su-Kam to fulfill the needs for total Power Management and Energy Optimization of a Cellular Mobile Site.

Conceptual Realization of Su-Kam's TMS

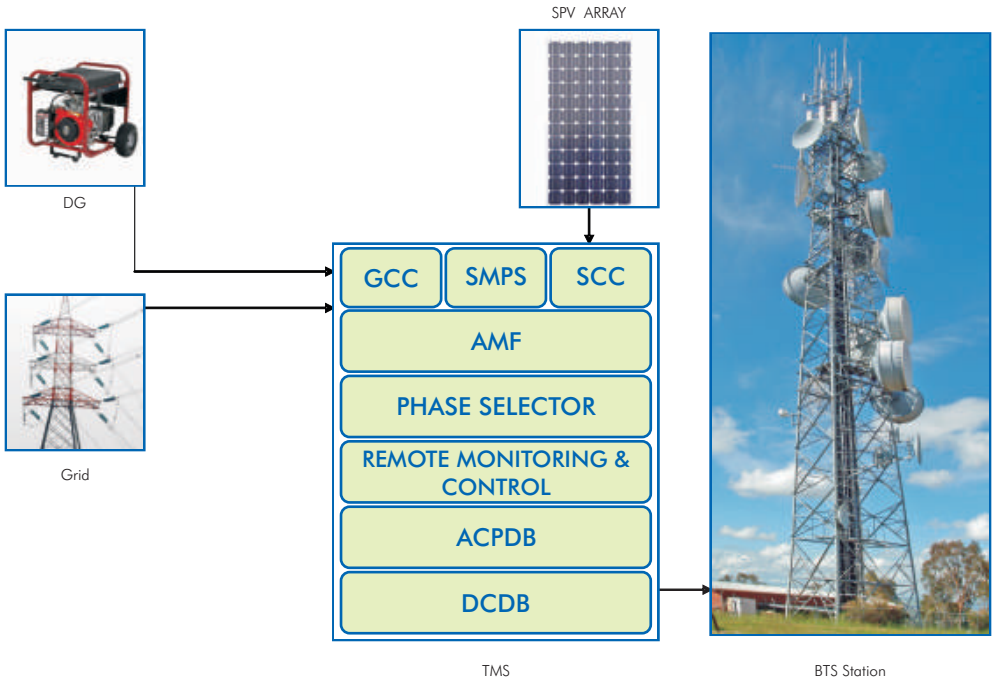
Su-Kam's TMS is a state of art, micro-controller based power management system for cellular mobile sites. The unit integrates the functionalities of power management, remote monitoring and control of various subsystems on the cell site like batteries and DG set.

A unique feature of the product is that it can take energy from multiple input sources in combination and extend DC output desired to feed the Telecom equipment. Hybrid input sources can be combined as Solar+DG, Solar+DG+EB etc.

A network operating and control centre (NOCC) is also provided to afford a central monitoring and control facility for a large number of sites.

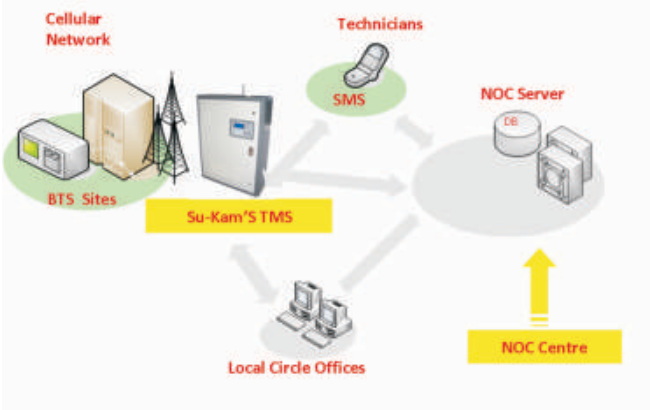
A conceptual realization of the integrated product offered by Su-Kam is depicted in diagram overleaf.

Hybrid Solution for Outdoor BTS

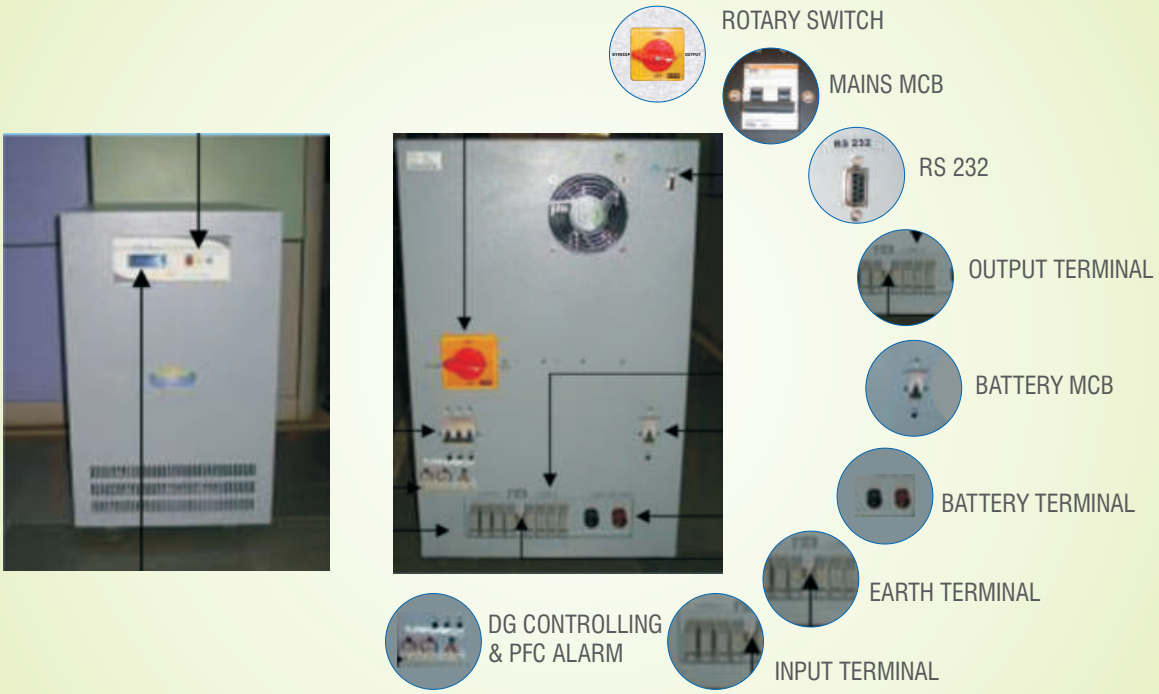


Unique features of Su-Kam's TMS

- Integrates the functionalities of rectification, grid charge control, solar charge control, power management and remote monitoring and control in one unit.
- Telcos do not need SMPS and Solar Charge Controller (SCC) separately.
- Comprehensive, multipurpose unit ensures uninterrupted DC supply to BTS and other Telecom equipment.
- Functionality of multiple operator energy metering inbuilt.
- Supports protocols of GPRS and SMS broadcast for status and error notification.
- NOCC provides complete fault control mechanism including MIS generation, fault doclet generation and notification esclation.
- Web-based NOCC ensures easy access from any P.O.P.



3P–3P DSP SINEWAVE TELECOM INVERTER



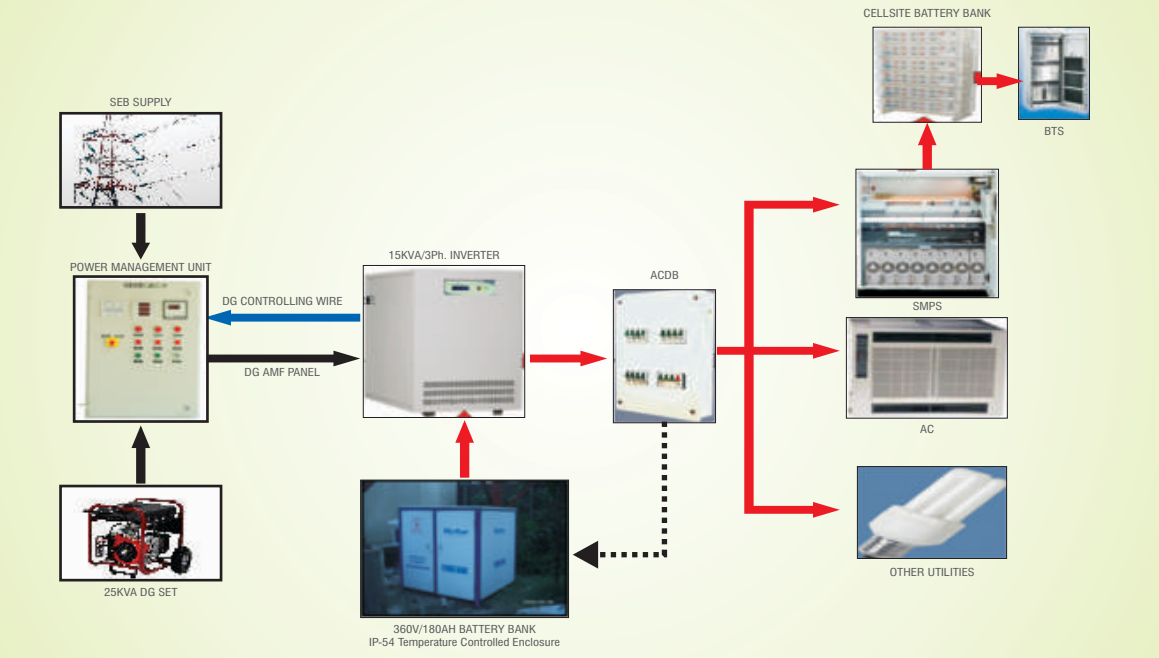
Low running cost: While the DG always runs at full load whatever the load may be, an inverter only draws the required amount of power from the battery bank. Inverter can also charge through the grid supply whereas DG requires costly fuel-Diesel to run.

Low maintenance cost: Maintenance cost of Su-Kam inverter is very low as compared to a DG set. SMF batteries are used, further reducing the maintenance cost and effort.

User friendly: Operation of Su-Kam inverter is so simple that even an uneducated person can operate it. Further, with the use of Remote Sensing and Control, it has become virtually automatic.

Clean and green: Inverter is clean and green as against the DG as it neither causes environment pollution nor noise pollution. Further, at sites where DG cannot be run for various reasons such as residential/green areas, inverter is a must.

BTS POWERING LAYOUT DIAGRAM



Remote Monitoring and Control Solutions

Remote monitoring and control equipment monitors the state of all critical components and sends periodic status updates to users at various levels of a telecom tower site. Signals are also sent as and when an alarm condition is detected. This feature helps in reducing the site down time through preventive maintenance as well as fast recovery procedures. Integral parts of this system are the Remote monitoring card placed at each site and a centralized Network Operations and Control Center (NOCC).

Remote monitoring and control card

1. Keeps on sensing relevant parameters such as voltage, current, frequency etc.
2. Keeps on comparing the sensed values with thresholds, which have been defined for these parameters.
3. Sends a SMS, if a parameter crosses the defined threshold.
4. Communicates the status messages with alarm code in proper format to concerned person and central server.
5. Communicates the status of a site at least once in every 24 hours.
6. Provides On-Demand remote monitoring of various parameters from designated telephone numbers and console at any time.
7. Can be made capable of monitoring and control of grid and DG supply in order to avoid the battery discharge below threshold.

Network Operations and Control Center (NOCC)

1. Configures the remote monitoring and control cards.
2. Shows the status of each remote element. It will also show linked parameters e.g., Voltage, Power, load etc. Both tabular and graphical display options are there.
3. Stores the alarms/messages received from the sites into a database. The stored data can be displayed in various tabular and graphical display formats based on latest inputs (cyclic site-wise)/search criteria.
4. Escalates alarms by SMS and/or Email to concerned personnel.
5. Generates MIS reports based on stored data by console. Same can be visualized by generating graphical display by histogram, graph and pie chart etc.