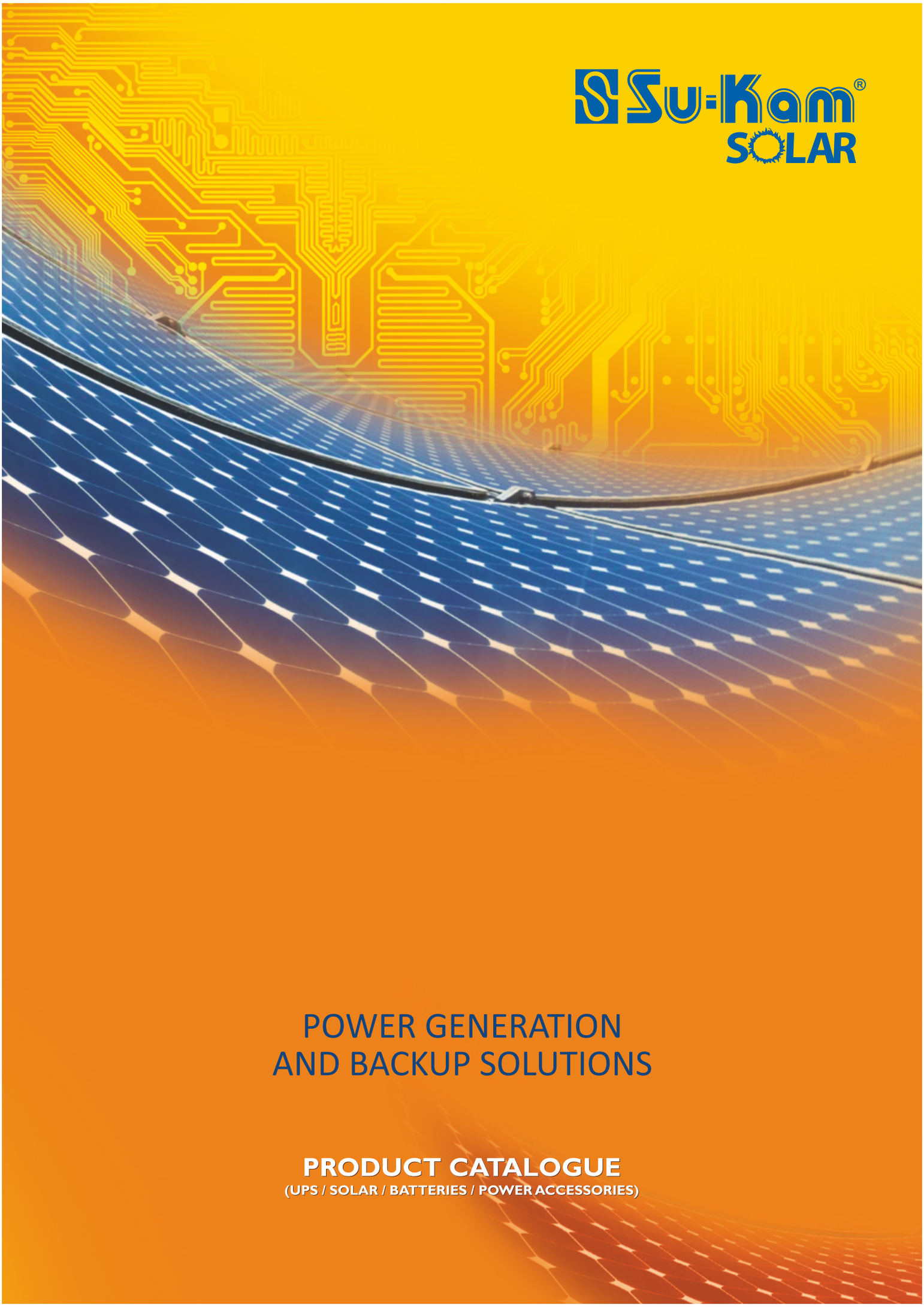
Su-Kam®
SOLAR



POWER GENERATION AND BACKUP SOLUTIONS

PRODUCT CATALOGUE

(UPS / SOLAR / BATTERIES / POWER ACCESSORIES)

index

ABOUTUS

The foundation for the Su-Kam success story was laid in the year 1988 when Kunwer Sachdev, the 'Inverter Man of India' took upon himself to revolutionize the power backup industry in the country. Today, Su-Kam has the distinction of being one of the leading power back up, generation & monitoring companies in India with a wide array of best in class innovative products, Government approved in-house R&D Center, highly efficient manufacturing units, widespread dealer, distributor & service network, robust exports, strong workforce, large project base, numerous awards & recognitions and a long string of firsts to its credit.

It has under its umbrella a wide range of over 200 products. The product categories include, Low & High Capacity UPS as well as Home, Commercial, Online & Line interactive UPS catering to capacities up to 100 KVA as well as solar power solutions. The company also specializes in manufacturing Lead Acid, Tubular, SMF, Tall Tubular & Automotive batteries, Battery equalizers, and Battery accessories.

The secret behind the success lies in the foundation of innovation. Su-Kam brought about a 360^0 transformation in the power backup industry by introducing a long string of firsts to the country - the first 'Sine Wave UPS' that eliminated the irritating humming sound and ensured high quality power output, the first 'MOSFET based UPS', the first ever 'Home UPS' that combined the functions of an inverter and a UPS and eliminated the need for two systems. Su-Kam was also the brain behind developing India's first ever 'High Capacity UPS' that could run ACs, refrigerators and other heavy load equipment. It changed the looks of Indian inverters by introducing to the country the 'Plastic Body Inverter' with the product 'Chick' being adjudged one of the top innovations of the decade.

The spirit of revolution stays strong and today Su-Kam has made a foray into the solar power sector. In a short span of time, it has made an impact with its mammoth projects and is fast making good on its commitment of ***'leaving no corner of the country in the dark'***. From rural to urban landscape, from homes to massive infrastructure development, the Su-Kam Solar presence is deeply felt.


Su-Kam wins ISA Technovation Award
INDIA TODAY
THE POWER ECONOMY
Business India
Igniting the power back-up industry
Kissey Kamyabi Ke
Kunwer Sachdev
Su-Kam
Selection of Chic Inverter as one of Top 10 Innovations by 'India Today' comes in same category as Tata Nano, Reva.
PLASTIC BODY INVERTER 2002
Designed by Su-kam, it uses advanced plastics to withstand high temperatures and yet gives a user-friendly finish
IGNITED MINDS
20 INNOVATORS WHO ARE CHANGING OUR LIVES
"Plastic body inverter-2002"-Designed by Su-Kam, it uses advanced plastic to withstand high temperatures and yet gives a user-friendly finish.
A chance encounter
NEWS FLASH
Su-Kam Shines at Kissan Mela
Yet again Su-Kam gets maximum mileage in the recently concluded Kissan Mela.The customers were left in awe after seeing our best in class innovative products. Dainik Savera Times, Ludhiana has covered our story.
मोबाइल करेगा सोलर इन्वर्टर के लिए रिमोर्ट का काम
SUBSCRIBE ET Now For Latest Market News
ET NOW
f explored in a systematic manner, we have a large market abroad
POWER BACK-UP INDUSTRY
U.S. MARKETS OPEN
7:09 'AUGHT WITH DRUGS AT KENNEDY AIRPORT. US
POWERLINE
Publication | Power Line Magazine
Language/Frequency | English/Monthly
Page No. | 95
Edition | July 2017
Kunwer Sachdev Founder and Managing Director, Su-Kam Power Systems Limited
THE NEW INDIAN EXPRESS
Su-Kam's solar revolution in TN
The solar installations by Su-Kam in educational institutions have reduced their dependence on the grid supply for power and contributed to a greener environment
FROST & SULLIVAN
INDIAN BACKUP INDUSTRY GROWTH
24th November
2

Awards & Recognitions

Su-Kam has received a number of awards & accolades over the years for innovation, exceptional products and the quality of service provided .

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 Awrd

National Award for Quality Product from Government of India

Amity HR Growth Award in Global Business

Certification & Validation

Su-Kam has 6 state - of - the - art manufacturing units and each unit adheres strictly to the company's stringent quality consciousness. As a result, it has a string of certifications and recognitions that validate its efforts to maintain the quality of each of its product.


DET NORSKE VERITAS
CERTIFICATE OF CONFORMITY


CERTIFICATE OF REGISTRATION
SU-KAM POWER SYSTEMS LTD.


ORIGINAL
No. 3901
GOVERNMENT OF INDIA
THE PATENT OFFICE
DESIGN OFFICE
CERTIFICATE OF REGISTRATION OF DESIGN


ORIGINAL
No. 3901
GOVERNMENT OF INDIA
THE PATENT OFFICE
DESIGN OFFICE
CERTIFICATE OF REGISTRATION OF DESIGN


भारत सरकार
GOVERNMENT OF INDIA
वाणिज्य एवं उद्योग मंत्रालय
MINISTRY OF COMMERCE & INDUSTRY
OFFICE OF THE ZONAL JOINT DIRECTOR GENERAL OF FOREIGN TRADE
मान्यता प्रमाण पत्र
Certificate of Recognition
STAR EXPORT HOUSE


CERTIFICATE OF REGISTRATION
SU-KAM POWER SYSTEMS LTD.


CERTIFICATE OF REGISTRATION

What is a UPS?

Uninterruptible Power Supply (UPS) is an electronic device that allows IT Load as well as normal electrical appliances to keep running when the primary power source is lost. It also provides protection from power surges. The changeover time is usually less than 4 milliseconds which helps IT loads to run effectively.

Why do we need a UPS?

A UPS is a device that provides consistent backup power during inconsistent power issues. The UPS can protect both data and the mission critical systems connected to it by stabilizing the voltage passing through. A UPS comes in a range of sizes and models that target different types of equipment.

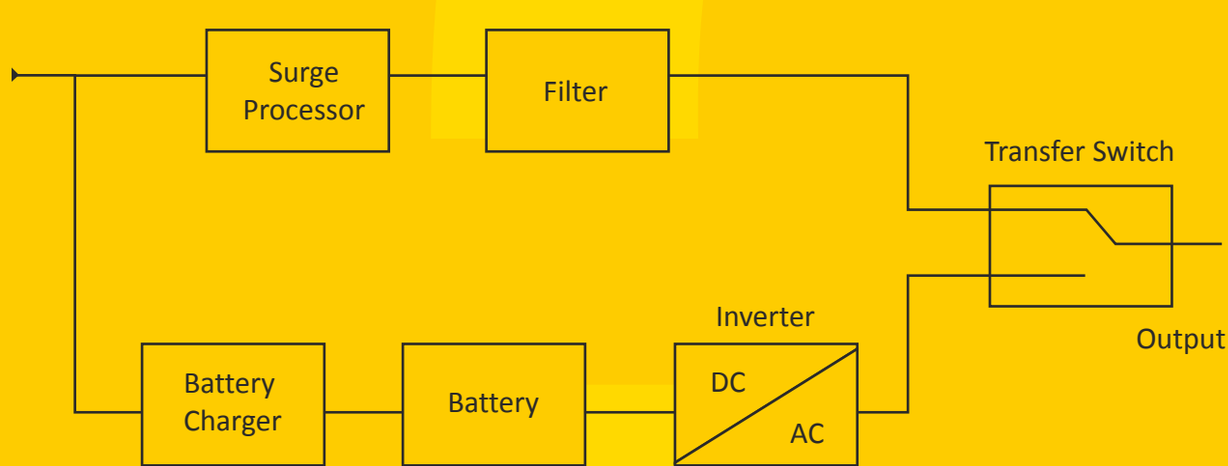
Advantages of using a UPS

- **Continuity:** Experience no outages to critical equipment like computers and even factory production lines.
- **Consistency:** Electronics within a UPS tell it when it needs to work and it kicks in alternate power as needed. This eliminates glitches or surges and allows time to safely shut down main systems if and when needed.
- **Protection:** Safeguards against all the oddities of electricity such as surges, spikes, dips and failure because the UPS essentially senses those things and switches to alternate power before the anomalies cause damage.
- **Filter:** A line-interactive UPS acts as a kind of filter by refining the power as it comes into the UPS then adjusting its output so that internal systems receive a clean, consistent supply free of abnormalities.

Application of UPS

UPS is the ideal solution for computers, data centers, telecommunication equipment or other electrical equipment and appliances where an unexpected power disruption could cause some type of loss or inconvenience, serious business disruption or data loss.

Block Diagram of Uninterrupted Power Supply (UPS)

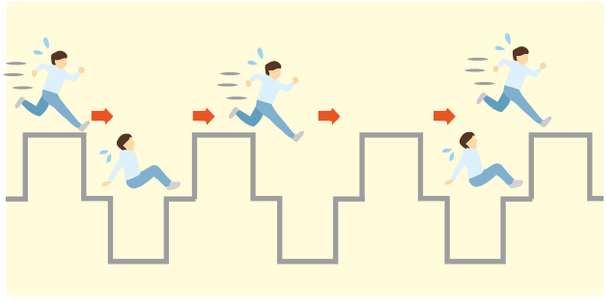


Types of UPS

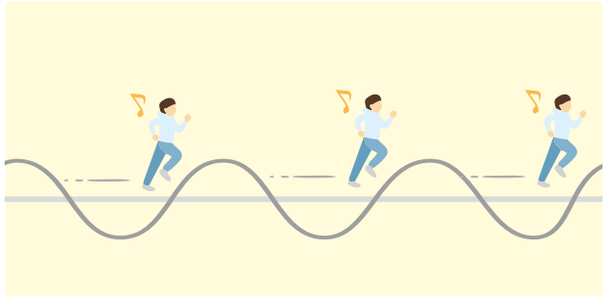
Modified Sine Wave UPS: In a modified Sine Wave UPS, the voltage rises and falls abruptly, the phase angle also changes abruptly and it sits at 0 Volts for some time before changing its polarity.

Pure Sine Wave UPS: The output voltage of a Sine Wave UPS has a sine wave form like the sine wave form of the mains / utility voltage. In a sine wave, the voltage rises and falls smoothly with a smoothly changing phase angle and also changes its polarity instantly when it crosses 0 Volts.

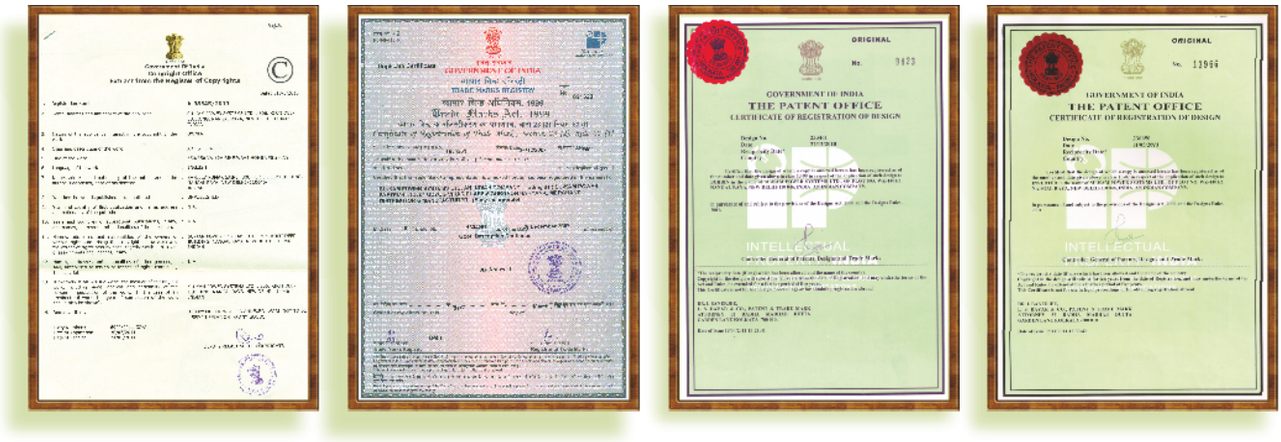
Online UPS: This type of UPS always delivers power to the load via battery using DC-AC inverter. Therefore in these UPS no switching mechanism is required and hence transfer time has no role during power failure. To maintain the charge of the battery, a battery charging unit is incorporated in the system. So when mains supply fails, the UPS continues to deliver power to the load using battery, however, charging of battery stops. This is what happens when a plugged-in laptop keeps on running without interruption when mains power fails.



Modified Sine Wave



Pure Sine Wave



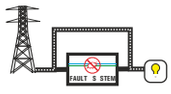
Design Patent & Technology Patents for Su-Kam Pure Sine Wave Series

Uninterrupted Power Supply (UPS)

8 MUST HAVE FEATURES IN YOUR UPS

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

20KHz Frequency design ensures noiseless operation of the UPS.



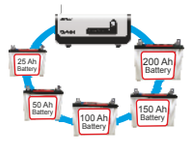
Automatic By-Pass System (ABS): in case of UPS failure the ABS present helps to by-pass electricity to load so that uninterrupted power supply can be enjoyed by the user.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

A UPS that helps set a UNIQUE BOOST VOLTAGE that ensures proper battery charging in all weather conditions with the help of a temperature sensor.

Pure Sine Wave UPS which helps in smooth & quiet operation of electrical appliances because of less harmonic distortion.

Six Stage Battery Charging ensures healthy charging & longer battery life that provides current and voltage as per the requirement of the charging stage and temperature of the battery.

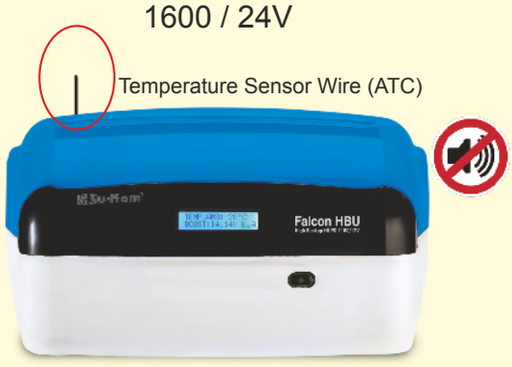


Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time. Ordinary UPS require at least a 150Ah battery to work even if you need less back-up time.

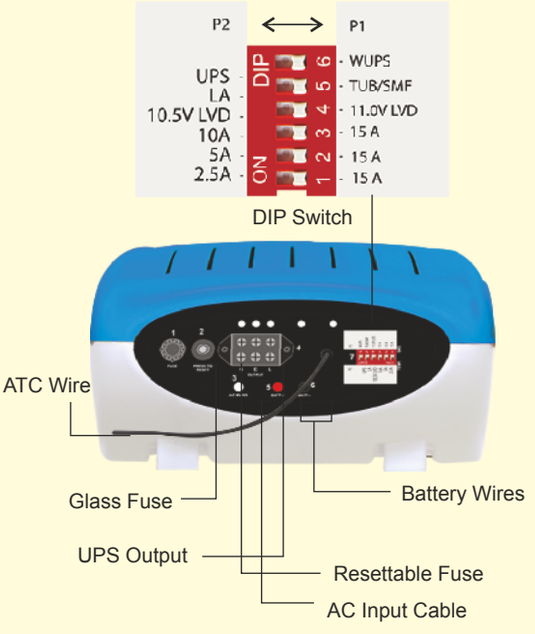
Falcon HBU Pure Sine Wave UPS - Premium Range

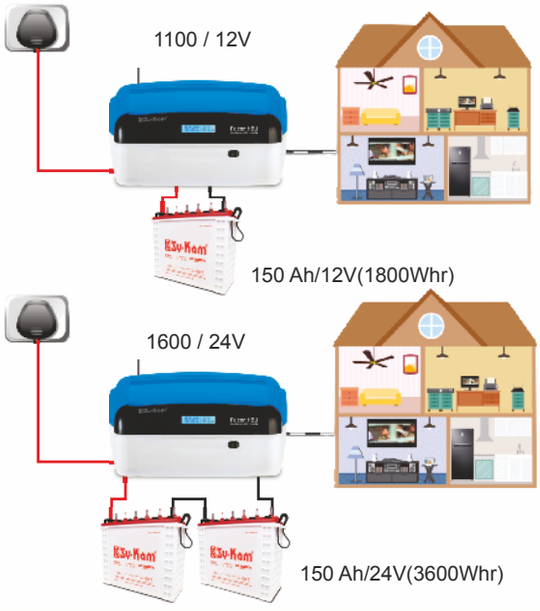
PURE SINE WAVE UPS

Falcon HBU
1100 / 12V
1600 / 24V



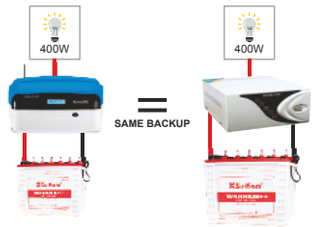
Back Panel





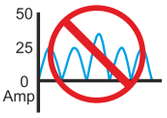
This product is India's first UPS to get a 4 star efficiency rating from Bureau of Energy Efficiency (BEE), Government of India. Falcon HBU takes very little electricity for its own functioning hence reducing the electricity bills and also increasing back up time. The Bluetooth mobile application provides many more choices on various settable criteria.

KEY FEATURES



Falcon HBU is a great money saver UPS. It gives the same backup with a smaller battery that other UPS give with a bigger battery. For instance, it would give the SAME backup with a 110Ah battery that an ordinary UPS would give with a 150Ah battery.

Falcon HBU consumes lesser energy thereby saving upto 30% electricity. Also, it consumes lesser power from the battery thus giving greater backup.



Falcon HBU charges battery using pure DC current that produces lesser harmonics as compared to other UPS. This extends the battery life by about 6 months.

FEATURES

- 20KHz frequency design ensures noiseless operation of the UPS.
- Pure Sine Wave UPS with inbuilt battery charger.
- ATC Technology with temperature sensor wire provided at the back panel increases battery life by minimum 6 months by providing optimum charging as per the climate conditions which reduces water topping frequency.
- Zero Switchover time - perfect for running sensitive equipment, can run upto 7 computers on 1100/12V & 11 computers on 1600/24V as well as printers, servers, modems etc.
- Standard Model 220V/50Hz (Models on order basis: 110V/60Hz and 220V/60Hz).
- Revolutionary Bi-Directional High Frequency Technology- both UPS working & battery charging is done at the same time through the same circuit.
- Ripple free current for battery charging enhances the life of battery and increases the backup time as well.
- 6 Stage battery charging technology helps in increasing battery life by providing healthy charging.
- Low Voltage Disconnect (LVD) - choosing the battery reserve higher than 10.5V i.e. 11V helps in recharging the battery fully and faster. It also acts like reserve power for emergency use with the help of DIP switch at the back panel.

Falcon HBU Pure Sine Wave UPS - Premium Range

Falcon HBU

1	SU-KAM WELCOMES YOU
2	MODEL FALCON HBU 1100
3	MAINS STATUS FAIL
4	BACKUP TIME
5	TEMP_AMB: 28C BOOST:14.14 V L.A.
6	ATTENTION BATTERY LOW
7	BATTERY LOW SHUTDOWN
8	BATTERY HIGH SHUTDOWN
9	SHORT CIRCUIT SHUTDOWN
10	ATTENTION OVERLOAD >100%
11	HIGH TEMPERATURE SHUTDOWN
12	OVERLOAD SHUTDOWN
13	CURRENT SEL:10A BATT:100 135 AH
14	BATT_LEVEL:094
15	UPS/WIDE UPS MODE FAN LIGHT LOAD

#Values displayed are for reference only.

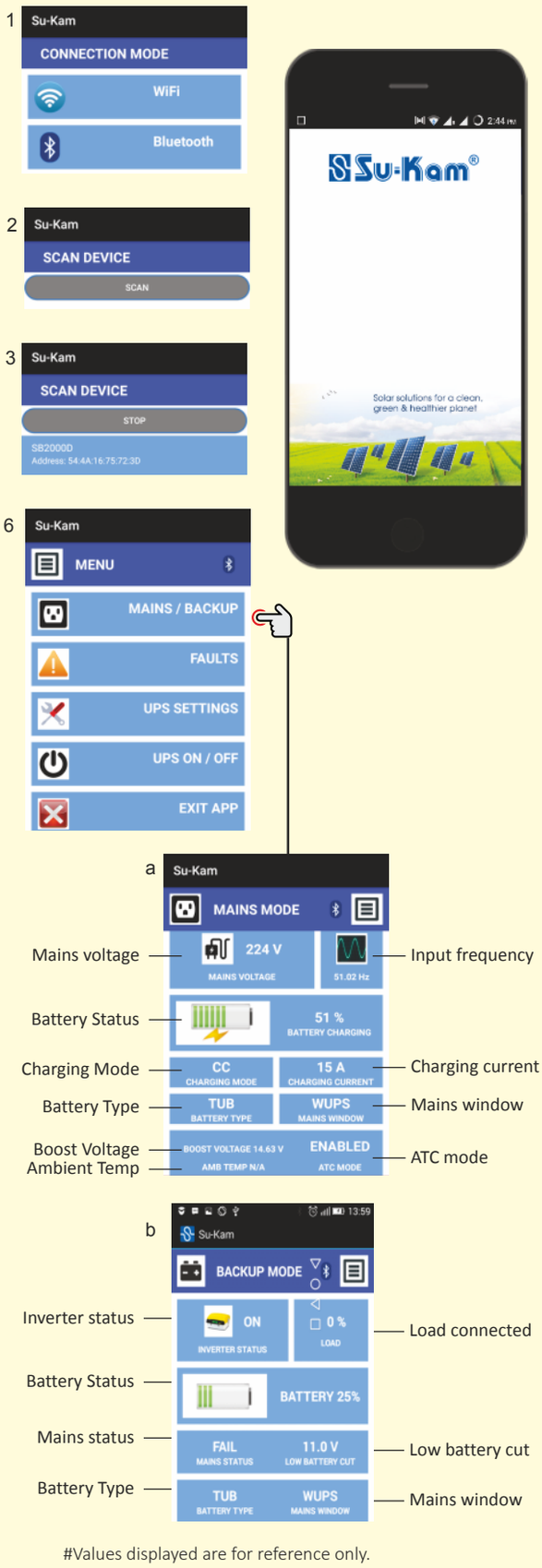
- Bluetooth feature helps to control and configure setting as per user requirements like System Status: Mains/Backup mode, Battery Status, Grid Status, Faults Status & Recovery Solution, turning UPS ON/OFF.
- Charger compatible with any battery size between 18Ah - 200Ah; selectable charging current provided are 2.5Amp, 5Amp, 10Amp & 15Amp. This can be selected either through the two way slider switch at back panel or through Su-Kam i-Manager Bluetooth mobile application which provides more options for selection.
- Displays backup on the current time in hours and minutes format on the display panel.
- Innovative plastic body manufactured with high quality industrial plastic that is completely shock proof and can withstand temperature upto 120° C.
- High Frequency Technology reduces the weight of this UPS by 60%.
- Soft Start Technology keeps the machines running longer by reducing their startup stress by reducing the torque applied to the electric motor.
- Automatic By-Pass System - in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.
- High Crest Factor of 3:1 enables to run loads that require high starting current, ideal for big appliances that need high starting and low running current.
- Compliance to international test standards.

Features	
Zero Changeover Time	✓
Noiseless Operation (20KHZ Freq.)	✓
Automatic Temperature Compensation	✓
Automatic By-Pass	✓
Low Voltage Disconnect	✓
Built-in Galvanic Isolation Transformer	✗
Freedom to choose any battery size	✓
90V charging	✗
Crest Factor	3:1
Pure DC Charging	✓
Pure Sine Wave	✓
6S Battery Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Falcon HBU Pure Sine Wave UPS - Premium Range

PURE SINE WAVE UPS

Falcon HBU



#Values displayed are for reference only.

SU-KAM i-Manager BLUETOOTH APPLICATION

NOTE: The Su-Kam i-Manager application is available on Android and IOS software.

Download App on Android & Apple Store

Follow the steps to download the app on your phone:-

- Open Google play store and type 'Su-Kam i-Manager'.
- Click on the first link.
- Click on the install link to start download.
- The Su-Kam i-Manager App asks permission to access your device. To continue download click on accept.

Follow the steps to connect your app to your Falcon+ UPS

- Open the Su-Kam shortcut icon on home screen of your mobile.
- Click on 'Bluetooth' connectivity option to connect your UPS.
- Click on Scan to detect your UPS.
- Now click on the Device ID detected by your app.
- Click on 'Continue' on the welcome screen.
- This is the main menu, select a Mains/Backup Mode
  a. Mains Mode displays the following criteria:
  Mains Voltage | Input frequency |
    - Charging Mode is Constant Current CC
    - Battery charge percentage
    - Battery type
    - Charging current
    - Mains window selection WUPS/UPS mode
    - Status of ATC mode
    - Ambient Temperature
    - Boost Voltage

  b. Backup Mode displays the following criteria:
    - Inverter Status is ON
    - Percentage of load connected
    - Battery Charge status in Hours and Minutes
    - Mains Status Fail
    - Low Battery cut will display the chosen option
    - Type of Battery selected

Applications*

Computer, Printer, Server, Refrigerator, Fan, Television, Hair Dryer, Washing Machine, Lights, Air Cooler, Water Purifier, Rice Cooker, Induction Stove, Juicer, Vacuum Cleaner, Music System, Game Console, Dishwasher, IT Load.

Design Registration No.: 239399
Technology Patent: Patent Protected

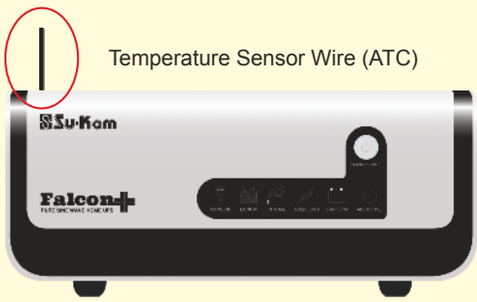
Available Models

Model	Dimension (LxWxH) in mm	Weight
Falcon HBU 1100/12V	308x310x170	3.5 Kg
Falcon HBU 1600/24V	308x310x170	3.7 Kg

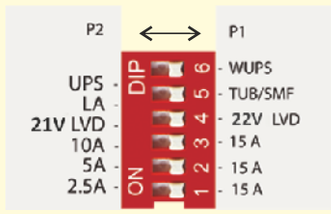
*Depending on Model Capacity

Falcon+ Pure Sine Wave UPS - Standard Range

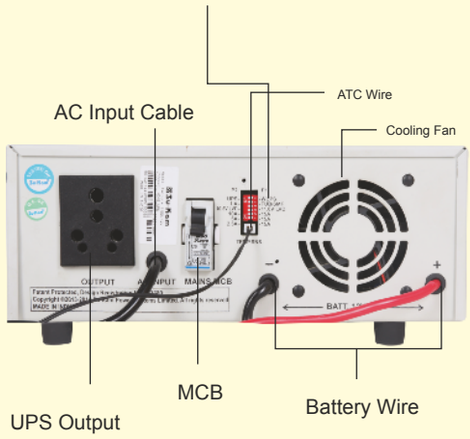
Falcon+ 1100/12V

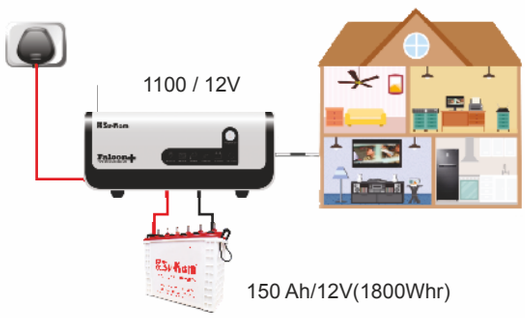


Back Panel



DIP Switch





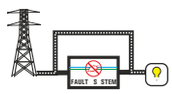
#Values displayed are for reference only.

Falcon+ Pure Sine Wave UPS is Bluetooth compatible which provides easy access and control to all the running parameters like System Status: Mains/Backup Mode, Battery Status, Grid Status, Faults Status & Recovery Solution.

KEY FEATURES

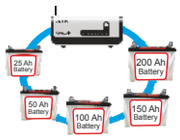
Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, routers.

ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging by decreasing boost voltage and undercharging by increasing boost voltage.



Automatic By-Pass System (ABS), in case of UPS failure the ABS present helps to by-pass electricity to load so that un-interrupted power supply can be enjoyed.

Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time. Ordinary UPS require at least a 150Ah battery to work even if you need less back-up time.



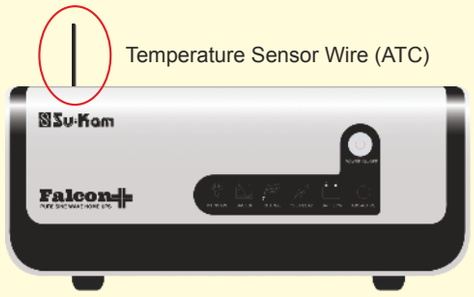
FEATURES

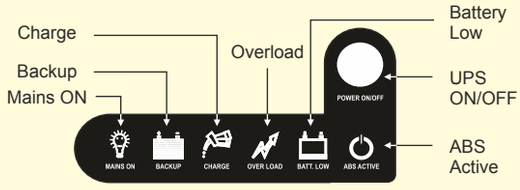
- 20KHz frequency design ensures noiseless operation of your UPS.
- Built-in Galvanic Isolation Transformer for charging circuitry on mains.
- Pure Sine Wave UPS with inbuilt battery charger.
- ATC Technology with temperature sensor wire provided at the back panel increases battery life by minimum 6 months by providing optimum charging as per the climate which reduces water topping frequency.
- Zero Switchover time - perfect for running sensitive equipment like computers, printers, servers, modems etc.
- Standard Model 220V/50Hz (Models available on order basis: 110V/ 60Hz and 220V/60Hz).
- 6 Stage battery charging technology helps in increasing the battery life by providing healthy charging.
- Suitable for countries with power fluctuations as it charges batteries at an optimal charging current even when voltage falls as low as 85V mains.
- Low Voltage Disconnect (LVD): choosing the battery reserve higher than 10.5V i.e. 11V helps in recharging the battery fully and faster. It also acts like reserve power for emergency use with the help of DIP switch at the back panel.
- Bluetooth features help to control and configure settings as per user requirements like System Status: Mains/Backup mode, Battery Status, Grid Status, Faults Status, Recovery Solution & ON/OFF feature.

Falcon+ Pure Sine Wave UPS - Standard Range

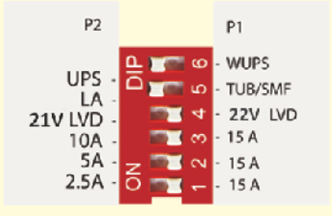
PURE SINE WAVE UPS

Falcon+ 1600/24V

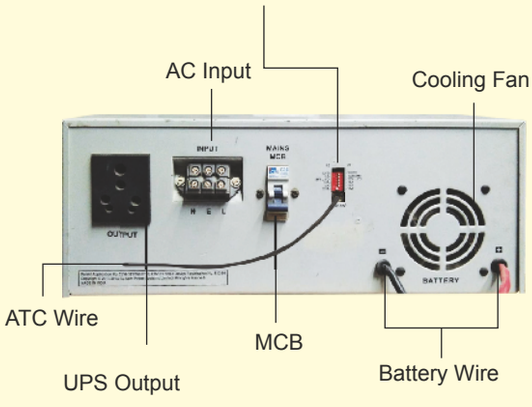


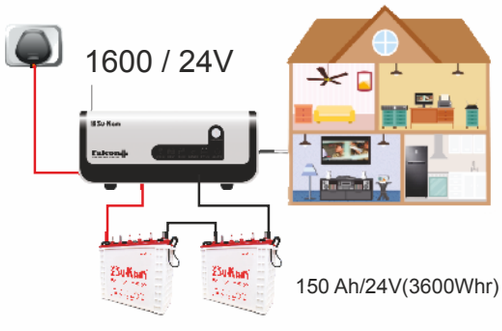


Back Panel



DIP Switch

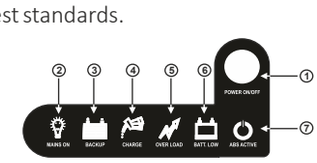




#Values displayed are for reference only.

- Charger compatible with any battery size between 18Ah - 200Ah; selectable charging currents provided are 2.5Amp, 5Amp, 10Amp & 15Amp. This can be selected either through the two way slider switch at back panel or through the Su-Kam i-Manager Bluetooth mobile application which provides more options for selection.
- Soft Start Technology keeps the machines running longer by reducing their startup stress by reducing the torque applied to the electric motor.
- Automatic By-Pass System : in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.
- Compatible with all kinds of generators especially rural make ones. When generators especially rural make ones provide electricity, their frequency may range between 42 to 65 Hz. In such a scenario inverters usually cut the supply and start running on backup mode. However, we have fitted our UPS in such a way that they continue to provide hassle free charging.
- High Crest Factor of 5:1, enables to run loads that require high starting current, ideal for appliances that need high starting and low running current like Fridge, Hair Dryers, Vacuum Cleaner
- It also provides extra protection with MCB on the UPS that protects all the appliances connected with it.
- Compliance to international test standards.

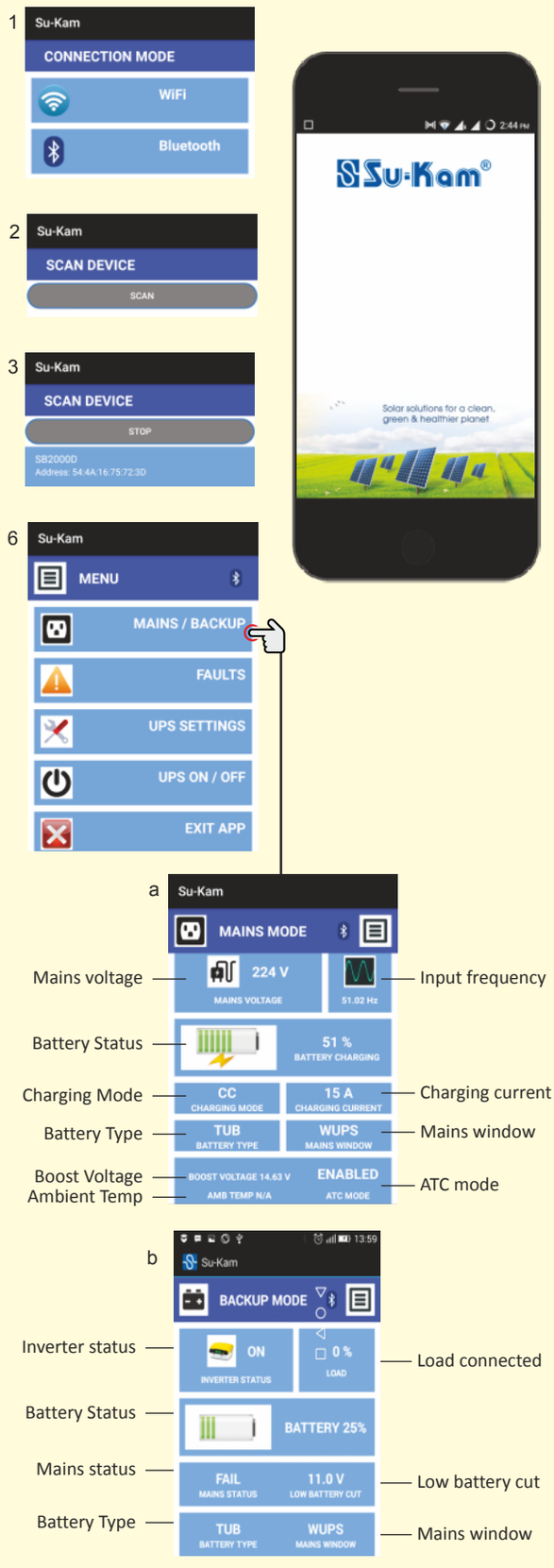
LED AND FAULT INDICATIONS



1. ON / OFF Switch: This glows continuously to indicate the UPS is in power ON mode and in power OFF mode the LED does not glow.
2. MAINS ON: This LED display icon glows to show that the mains grid power is available.
3. BACKUP: This LED display icon glows when mains grid power is not available and the UPS is providing back up.
4. BATTERY CHARGING/CHARGED: This LED display icon glows in an on-and-off pattern during charging the batteries from main grid power.
   When battery is fully charged it glows continuously.
5. OVERLOAD: This LED display icon glows in red in an on-and-off pattern along with the buzzer beeping incase of overload condition. The UPS will try maximum 8 times before shutting down if the overload is not reduced. It can be reset by reducing the load and then switching OFF the power button on the front panel and switching it ON after 3 seconds.
   SHORT CIRCUIT: This LED will glow continuously along with buzzer beep in case of a short circuit in the system output load. The UPS will try maximum 4 times before shutting down. After this the short circuit has to be removed and the UPS has to be reset by switching off the power button on the front panel and switching it on after 3 seconds.
6. BATTERY LOW: This LED display icon glows in red in an on-and-off pattern along with buzzer beep to indicate low level of battery charge or battery close to discharge. As the battery voltage reaches the selected cut-off limit, which is either 10.5V / 11V, the UPS will shut down and the LED icon will glow in red continuously. The UPS will resume working only after battery starts charging again from mains.
7. Automatic Bypass Active: This LED display icon will glow continuously till the power button of inverter is on.

Falcon+ Pure Sine Wave UPS - Standard Range

Falcon+



SU-KAM i-Manager BLUETOOTH APPLICATION

NOTE: The Su-Kam i-Manager application is available on Android and IOS software.

Follow the steps to download the app on your phone:-

• Open Google play store and type 'Su-Kam i-Manager' • Click on the first link • Click on the install link to start download • The Su-Kam i-Manager App asks permission to access your device. To continue download click on accept.

Follow the steps to connect your app to your Falcon+ UPS

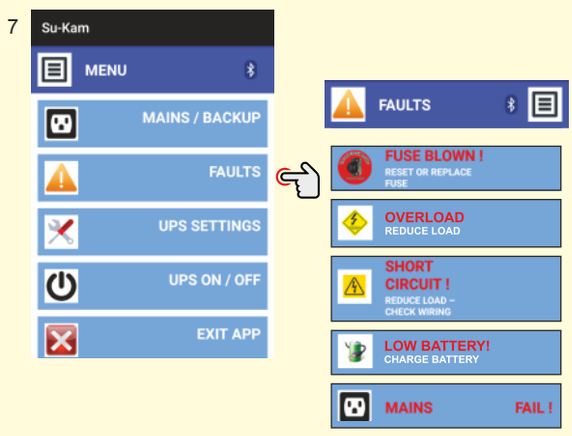
- Open the Su-Kam Shortcut icon on home screen of your mobile
- Click on 'Bluetooth" connectivity options to connect your inverter.
- Click on Scan to detect your inverter. • Now click on the Device ID detected by your app. • Click on 'Continue' on the welcome screen.
- This is the main menu, select a Mains/Backup Mode
  a. Mains Mode displays the following criteria:
  Mains Voltage | Input frequency | Charging Mode is Constant Current CC | Battery charge percentage | Battery type | Charging current | Mains window selection WUPS/UPS mode | Status of ATC mode | Ambient Temperature | Boost Voltage
  b. Backup Mode displays the following criteria:
  UPS Status is ON | Percentage of load connected | Battery percentage available | Mains Status Fail | Low Battery cut will display the chosen option | Type of Battery selected
- Going back to the main menu and selecting Faults icon will show a list of faults that one may get during the use. They are:
  FUSE: When fuse trips a message will appear on screen: MCB trip, only after fixing the fuse will it display FUSE OK.
  OVERLOAD: Error will occur if more than the rated load is connected, system will try maximum 8 times to restart. Incase the overload is reduced then system will start immediately.

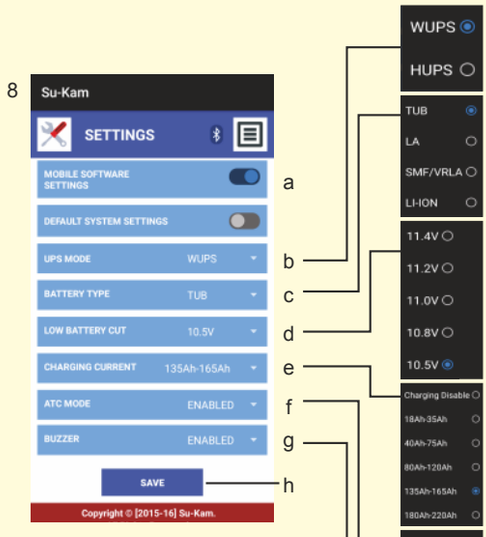
Falcon+ pure sine wave UPS is Bluetooth as well as Solar compatible which provides easy access and control to all the running parameters like System Status: Mains/Backup mode, Battery Status, Grid Status, Faults Status & Recovery Solution. The product is great value for money.

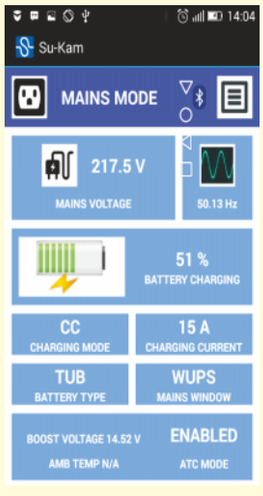
Falcon+ Pure Sine Wave UPS - Standard Range

PURE SINE WAVE UPS

Falcon+







Features	
Zero Changeover Time	✓
Noiseless Operation (20KHZ Freq.)	✓
Automatic Temperature Compensation	✓
Automatic By-Pass	✓
Low Voltage Disconnect	✓
Built-in Galvanic Isolation Transformer	✓
Freedom to choose any battery size	✓
90V Charging	✓
Crest Factor	5:1
Pure DC Charging	✘
Pure Sine Wave	✓
6S Battery Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Applications*

Computer, Printer, Server, Refrigerator, Fan, Television, Hair Dryer, Washing Machine, Lights, Air Cooler, Water Purifier, Rice Cooker, Induction Stove, Juicer, Vacuum Cleaner, Music System, Game Console, Dishwasher, IT Load, Modem.

Design Registration No.: 25282 & 11727
Technology Patent: Patent Protected

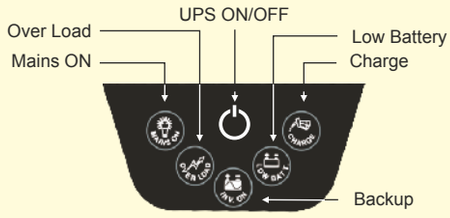
Available Models

Model	Dimension (LxWxH) in mm	Weight
Falcon+ 1100/12V	302x293x132	10.64Kg
Falcon+ 1600/24V	407x304x172	15.545 Kg

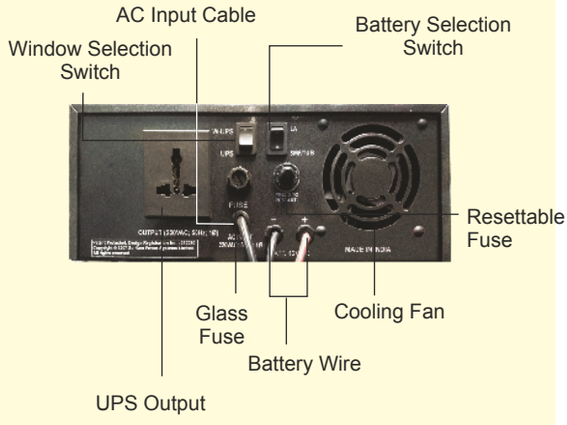
*Depending on Model Capacity

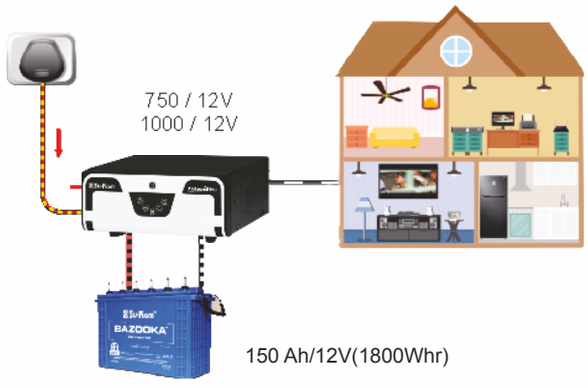
Falcon ECO Pure Sine Wave UPS - Economy Range

Falcon ECO
750 / 12V
1000 / 12V



Back Panel





#Values displayed are for reference only.

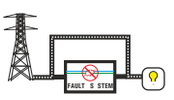
Falcon Eco UPS is a smart, stylish and affordable Pure Sine Wave UPS. Equipped with 6 stage battery charging, resettable fuse and other great features, Falcon Eco is the best in its category. It is ideal for areas which have low voltage problems since it is designed to efficiently charge battery at input voltage as low as 90V. It is India's most cost-effective and affordable UPS.

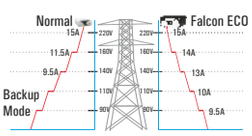
KEY FEATURES

ZERO Switch Over Time

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, routers.

Automatic By-Pass System (ABS), in case of UPS failure the ABS present helps to by-pass electricity to load so that un-interrupted power supply can be enjoyed.





90V Charging is an advanced feature which helps charge the batteries even when the voltage is as low as 85-90V. Ordinary inverter go on battery backup mode when voltage falls below 110V.

20KHz frequency design ensures noiseless operation of UPS.

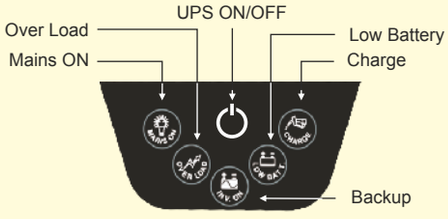
FEATURES

- 20KHz frequency design ensures noiseless operation of your UPS.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Pure Sine Wave UPS with inbuilt battery charger.
- Zero Switchover time - perfect for running sensitive equipment like computers, printers etc.
- Standard Model 220V/50Hz (Models available on order basis: 110V/60Hz and 220V/60Hz).
- 6 Stage battery charging technology helps in increasing the battery life.
- Suitable for countries with power fluctuations as it charges batteries even when voltage falls as low as 90V mains.
- Soft Start Technology keeps the machines running longer by reducing their startup stress.
- Compatible with all kinds of generators especially rural make ones. When generators provide electricity their frequency may range between 42 to 65Hz. In such a scenario UPS usually cut the supply and start running on backup mode. But we have fitted our UPS in such a way that they continue to provide hassle free backup.
- High Crest Factor of 3:1 enables to run loads that require high starting current, ideal for big appliances that need high starting and low running current.
- Compliance to international test standards.

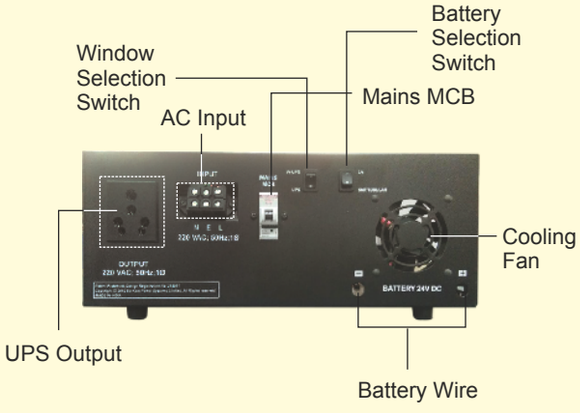
Falcon ECO Pure Sine Wave UPS - Economy Range

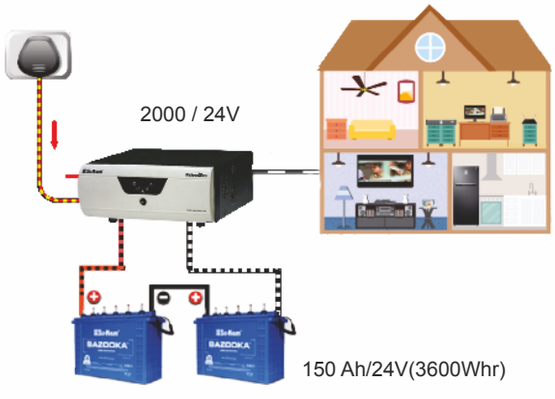
PURE SINE WAVE UPS

Falcon ECO
2000 / 24V



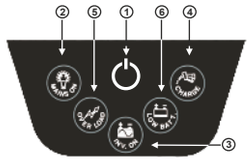
Back Panel





#Values displayed are for reference only.

LED AND FAULT INDICATIONS



1. ON/OFF Switch: This glows continuously to indicate the UPS is in power ON mode and in power OFF mode the LED does not glow.
2. MAINS ON: This LED display icon glows to show that the mains grid power is available.
3. FUSE BLOWN: In case of MAINS available, if there is any short circuit or overload the fuse or MCB will trip. The customer has to reset the MCB or Fuse for the normal functioning of the UPS.
   Incase of overload condition the LED display will glow in an on-and-off pattern with a buzzer beep. To restore the mains line, reduce the load and reset the resettable fuse at the back panel.
4. BACKUP: This LED display icon glows when mains grid power is not available and the UPS is providing back up.
5. BATTERY CHARGING/CHARGED: This LED display icon will glow in an on-and-off pattern during charging the batteries from main grid power. When battery is fully charged it glows continuously.
6. OVERLOAD: This LED display icon glows in red in an on-and-off pattern along with the buzzer beeping similarly incase of overload condition. The UPS will try maximum 8 times before shutting down if the overload is not reduced. It can be reset by reducing the load and then switching OFF the power button on the front panel and switching it ON after 3 seconds.
7. SHORT CIRCUIT: This LED will glow continuously along with buzzer beep in case of a short circuit in the system output load. The UPS will try maximum 4 times before shutting down. After this the short circuit has to be removed and UPS has to be reset by switching off the power button on the front panel and switching it on after 3 seconds.
8. BATTERY LOW: This LED display icon glows in red in an on- and-off patter along with buzzer beep to indicate low level of battery charge or battery close to discharge. If the battery voltage reaches the selected cut-off limit, which is 10.5V, the inverter will shut down and the LED icon will glow in red continuously. The UPS will resume working only after battery starts charging again from mains.

Applications*

Computer, Printer, Server, Fan, Television, Hair dryer, Washing Machine, Lights, Air Cooler, Water Purifier, Rice Cooker, Induction Stove, Vacuum Cleaner, Music System, Game Console, Dishwasher.

Design Registration No.: 239399
Technology Patent: Patent Protected

Features	
Zero Changeover Time	✓
Noiseless Operation (20KHZ Freq.)	✓
Automatic Temperature Compensation	✗
Automatic By-Pass	✓
Low Voltage Disconnect	✗
Built-in Galvanic isolation Transformer	✓
Freedom to choose any battery size	✗
90V Charging	✓
Crest Factor	3:1
Pure DC Charging	✗
Pure Sine Wave	✓
6S Battery Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

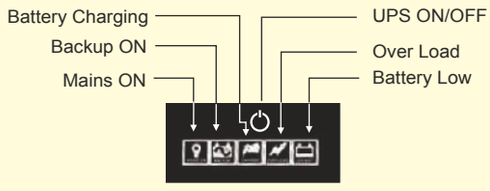
Available Models

Model	Dimension (LxWxH) in mm	Weight
Falcon ECO 750/12V	275x270x121	8.7 Kg
Falcon ECO 1000/12V	275x270x121	8.7 Kg
Falcon ECO 2000/24V	405x285x170	15.5 Kg

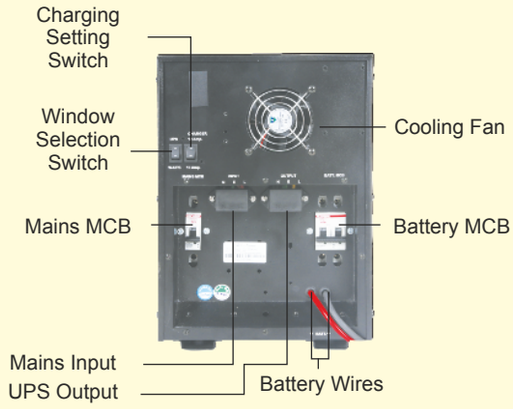
*Depending on Model Capacity

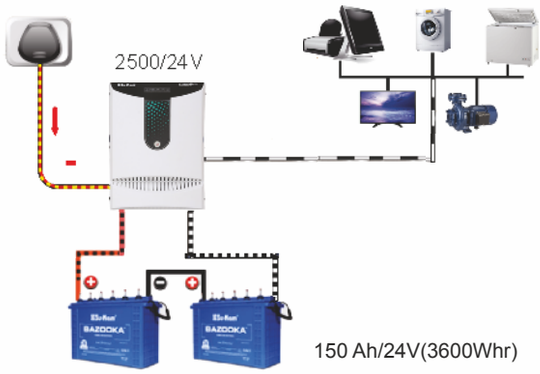
Fusion ECO Pure Sine Wave UPS - Economy Range

Fusion ECO 2500/24V



Back Panel





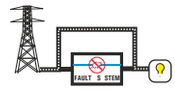
#Values displayed are for reference only.

Su-Kam introduces Fusion Eco - India's top rated UPS. Apart from normal loads, Fusion Eco is ideal for your heavy loads like printers, servers, computers, routers, ACs, Dentist Chairs etc. This eliminates the need for you to have a separate UPS for your domestic and IT loads.

KEY FEATURES

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

Automatic By-Pass System (ABS), in case of UPS failure the ABS present helps to by-pass electricity to load so that uninterrupted power supply can be enjoyed.



All Generator Compatible Fusion series is capable of withstanding the uneven power supplied by all types of generators and convert it into healthy power source and charge your batteries.

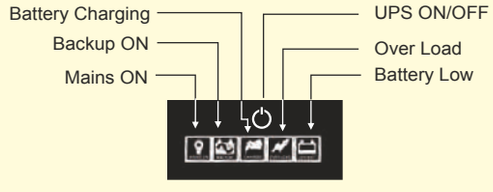
True Galvanic Isolation: Fundamental frequency transformer is used for low frequency isolation at the grid side. It provides safety to equipment against power surges & transients.

FEATURES

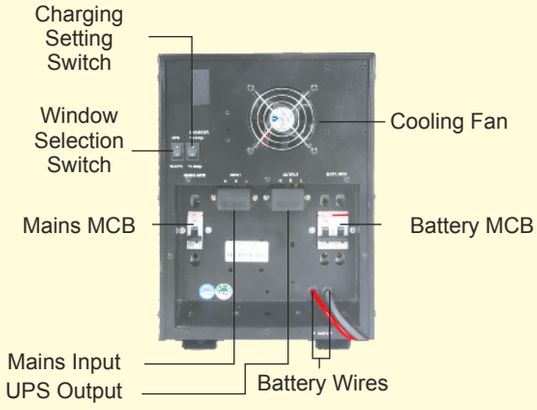
- 20KHz frequency design ensures noiseless operation of your UPS.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Pure Sine Wave UPS with inbuilt battery charger.
- Zero Switchover time - perfect for running sensitive equipment like computers, printers etc.
- 6 Stage battery charging technology helps in increasing the battery life.
- Suitable for countries with power fluctuations as it charges batteries even when voltage falls as low as 90V mains.
- Soft Start Technology keeps the machines running longer by reducing their startup stress.
- Compatible with all kinds of generators especially rural make ones. When generators provide electricity their frequency may range between 42 to 65Hz. In such a scenario UPS usually cut the supply and start running on backup mode. But we have fitted our UPS in such a way that they continue to perform provide hassle free backup.
- High Crest Factor of 3:1 enables to run loads that require high starting current, ideal for big appliances that need high starting and low running current.
- Compliance to international test standards.
- It can run commercial, domestic and IT loads.
- Automatic By-Pass System : in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.

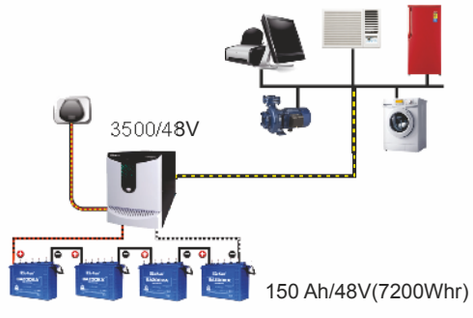
Falcon ECO Pure Sine Wave UPS - Economy Range

Fusion ECO 3500/48V



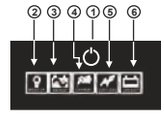
Back Panel





#Values displayed are for reference only.

LED AND FAULT INDICATIONS



1. ON/OFF Switch: This glows continuously to indicate the UPS is in power ON mode and in power OFF mode the LED does not glow.
2. MAINS ON: This LED display icon glows to show that the mains grid power is available.
3. FUSE BLOWN: In case of MAINS available, if there is any short circuit or overload the MCB will trip. The customer has to reset the MCB for the normal functioning of the UPS.
   Incase of overload condition the LED display will glow in an on-and-off pattern with a buzzer beep. To restore the mains line, reduce the load and reset the resettable fuse at the back panel.
4. BACKUP: This LED display icon glows when mains grid power is not available and the UPS is providing back up.
5. BATTERY CHARGING/CHARGED: This LED display icon will glow in an on-and-off pattern during charging the batteries from main grid power. When battery is fully charged it glows continuously.
6. OVERLOAD: This LED display icon glows in red in an on-and-off pattern along with the buzzer beeping similarly incase of overload condition. The UPS will try maximum 8 times before shutting down if the overload is not reduced. It can be reset by reducing the load and then switching OFF the power button on the front panel and switching it ON after 3 seconds.
7. SHORT CIRCUIT: This LED will glow continuously along with buzzer beep in case of a short circuit in the system output load. The UPS will try maximum 4 times before shutting down. After this the short circuit has to be removed and UPS has to be reset by switching off the power button on the front panel and switching it on after 3 seconds.
8. BATTERY LOW: This LED display icon glows in red in an on- and-off pattern along with buzzer beep to indicate low level of battery charge or battery close to discharge. If the battery voltage reaches the selected cut-off limit, which is 10.5V, the inverter will shut down and the LED icon will glow in red continuously. The UPS will resume working only after battery starts charging again from mains.

Applications*

Computer, Printer, Server, Inverter AC 1.5 tons with 5 Star rating, Air Cooler, Dentist Chair, Treadmill, Load running off upto 1 HP Motor.

Design Registration No.: 239399
Technology Patent: Patent Protected

Features	
Zero Changeover Time	✓
Noiseless Operation (20KHZ Freq.)	✓
Automatic Temperature Compensation	✗
Automatic By-Pass	✓
Low Voltage Disconnect	✗
Built-in Galvanic Isolation Transformer	✓
Freedom to choose any battery size	✗
90V Charging	✓
Crest Factor	3:1
Pure DC Charging	✗
Pure Sine Wave	✓
6S Battery Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Available Models

Model	Dimension (LxWxH) in mm	Weight
Fusion ECO 2500KVA/24V	395x245x355	23.2 Kg
Fusion ECO 3500KVA/48V	395x245x355	31.7 Kg

*Depending on Model Capacity

What is Pure Sine Wave Inverter?

A Pure Sine Wave Inverter supplies pure power, which is actually purer than even the power supplied by the grid. It is 100% safe to run the most sophisticated, expensive and sensitive office equipment, silently. It has already established itself as the most reliable option to generators.

Why do we need a Pure Sine Wave Inverter?

A Pure Sine Wave Inverter is powered with reliable, regulated and stabilized Pure Sine Wave Output and is a source of complete power generation system that is suitable for all types of commercial establishments. It is capable of running everything from Air Conditioners to heavy machineries in a most cost effective manner.

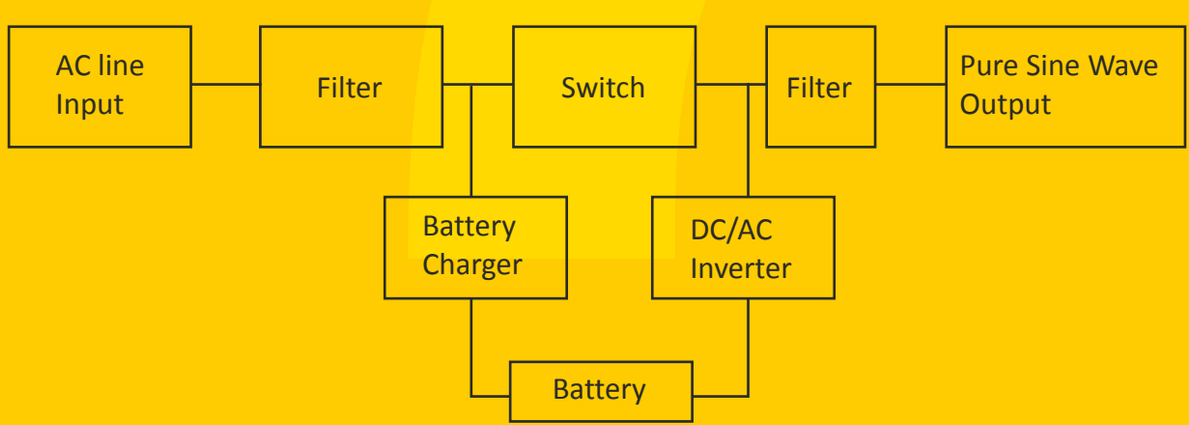
Application of Pure Sine Wave Inverter

Su-Kam Collosal inverters are powerful and reliable power backup solutions for running sensitive appliances. It can run all powerful machines such as deep freezers, industrial drives & motors, laboratories, petrol pumps, clubs, telecom towers, Banks / ATM, Call Centers, Data centers, Textile industry and many more.

Advantages

Ideal for all types of commercial establishments, Pure Sine Wave Inverters are a complete power generation system that run all your expensive and sensitive office/ industrial equipment in the most cost effective manner.

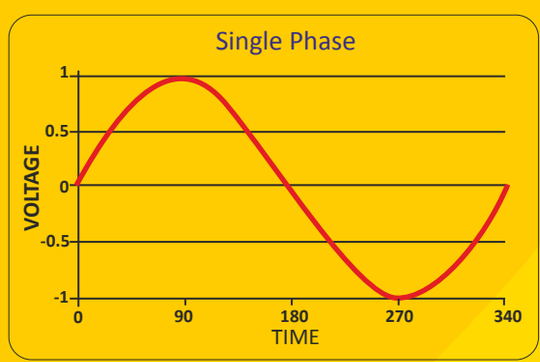
Block Diagram of Pure Sine Wave Inverter



Types of Pure Sine Wave Inverters

Single-phase power is:

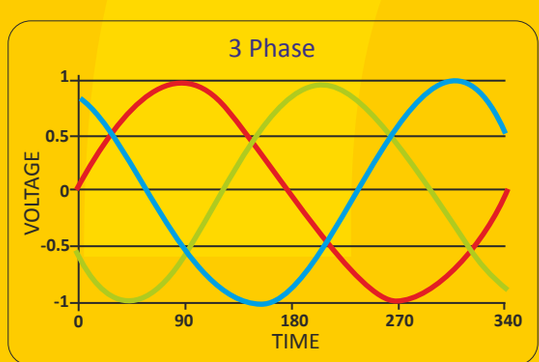
- Commonly used in homes.
- Able to supply ample power for most customers with smaller requirements, including homes and small, non-industrial businesses.
- Adequate for running motors up to about 5 horsepower; a single-phase motor draws significantly more current than the equivalent 3-phase motor, making 3-phase power a more efficient choice for industrial applications.



With the wave form of single-phase power, when the wave passes through zero, the power supplied at that moment is zero.

3-Phase power is:

- Common in large businesses as well as manufacturing industries.
- Increasingly popular in power-hungry, high-density data centers.
- Expensive to convert from an existing single-phase installation, but 3-phase allows for smaller, less expensive wiring and lower voltages, making it safer and less expensive to run.
- Highly efficient for equipment designed to run on 3-phase.



3-phase power has 3 distinct wave cycles that overlap. Each phase reaches its peak 120 degrees apart from the others so the level of power supplied remains consistent

Pure Sine Wave Inverter

9 MUST HAVE FEATURES IN YOUR PURE SINE WAVE INVERTER

CREST Factor: Pure Sine Wave Inverter should have a crest factor of 5:1 which means that it is capable of taking 5 times more peak current than its mentioned capacity.

Safe for sensitive equipment - The power produced by Pure Sine Wave Inverter is 100% pure power which is purer than the power supplied from the grid. This makes it absolutely safe to run even the most sensitive electronic equipment.

Soft Start: Pure Sine Wave inverter Series incorporates Soft Start Technology which does not allow high startup currents from large inductive loads to shut down the inverter. Soft Start also improves inverter operation.

High Efficiency and Reliability - The technology used and the choice of high performance components mean that Pure Sine wave Inverter can obtain exceptional performance and efficiency levels, from very low footprint and dimensions.

Less Switchover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

Cold Start: Pure Sine Wave inverter series enables the user to also start the inverter in Battery Mode, in the absence of power from the mains (Grid Power). The UPS can be started from battery directly without AC utility.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

Solar Compatible - Pure Sine Wave should be solar compatible so that you can also use free solar power for load running as well as battery charging.

Six Stage Battery Charging ensures healthy charging & longer battery life that provides current and voltage as per the requirement of the charging stage and temperature of the battery.

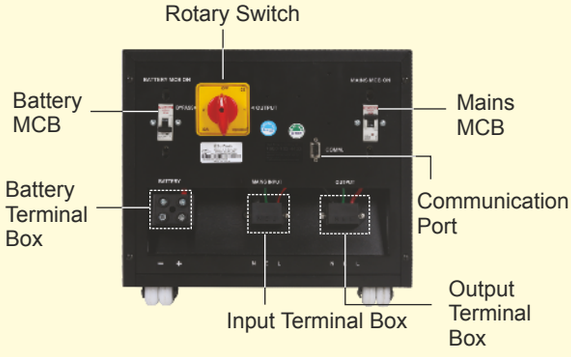
Colossal (1P-1P) - Pure Sine Wave Inverter - Standard Range

PURE SINE WAVE INVERTER

Colossal (1P-1P)
5KVA/96V
7.5KVA/120V
10KVA/180V

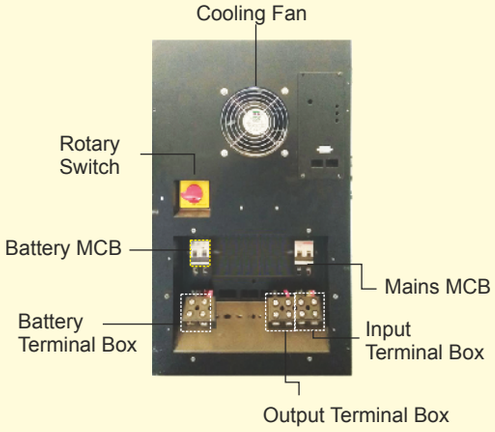
5 KVA/96V

Back Panel



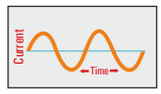
7.5KVA/120V
10KVA/180V

Back Panel



Su-Kam's Pure 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.

KEY FEATURES



Supply Pure Power - Pure 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 the most reliable option to generators at banks/ATMs, hospitals, petrol pumps and shopping malls to name a few.

Noiseless Operation - The inverter has noiseless operation thereby eliminating noise

ATM 6S Charger - ATM with pulse charger is used for the first time in invertors. Till now this feature was available only in online UPS. ATM stands for Auto Trickle Mode. It is fully software controlled.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

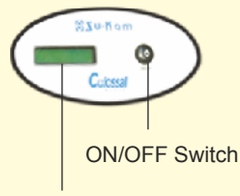
FEATURES

- Safe for sensitive equipment: The power produced by Su-Kam Sine Wave Inverter – Colossal Series is 100% pure power which is purer than the power supplied from the grid. This makes it absolutely safe to run even the most sensitive electronic equipment.
- Heavy Duty Usage: Su-Kam's Pure Sine Wave Inverter – Colossal Series, available as standard as well as customized solutions from 5 KVA to 100 KVA, are ideal for all types of commercial establishments like offices, showrooms, shopping malls, hospitals, hotels, schools, labs, petrol pumps, banks, telecom towers, ATMs and BPOs etc.
- Pollution Free: Unlike a generator, Colossal Series runs on batteries and is therefore completely non-polluting and can be comfortably placed in any working environment.
- Low Running Cost: The Colossal Series produces and draws only the required amount of power from the battery, thereby maintaining a low running cost.
- High Efficiency and Reliability: The technology used and the choice of high performance components mean Colossal Series can obtain exceptional performance and efficiency levels, from very low footprint and dimensions.
- Advanced Communication: The Series is equipped with an advanced LCD display which provides information regarding status, remedial actions needed, battery level, load level to name a few.
- Battery Care System: The Colossal Series consists of a range of features designed to optimize battery performance and enhance the battery life.

Colossal (1P-1P) - Pure Sine Wave Inverter - Standard Range

Colossal (1P-1P) 5KVA/96V

Front Panel

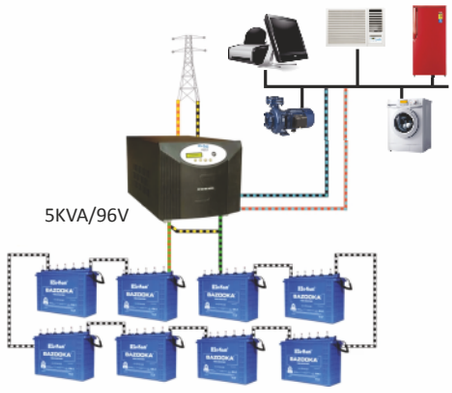


- Soft Start Technology: Has Soft Start Technology which does not allow high startup currents from large inductive loads to shut down the inverter. Soft Start also improves inverter operation.
- Cold Start: The Cold Start function enables the user to also start the inverter in Battery mode in the absence of power from the mains (Grid Power). It also has the unique advantage of being compatible with your existing generator i.e. it can charge batteries from grid power as well as power produced by generators. The user can also integrate it with solar power to charge the batteries by using external solar charge controller.
- Solar Compatible - It is solar compatible which enables you to use free solar power for load running as well as battery charging.

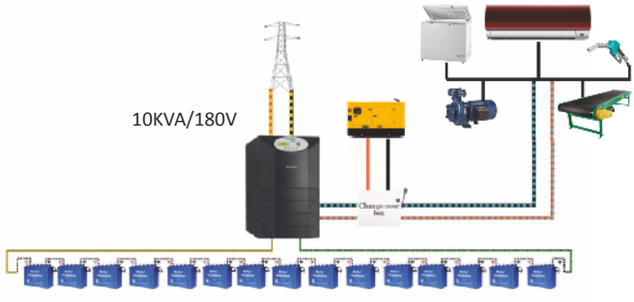
LCD MESSAGES

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% [▮▮▮▮▮▮▮▮▮▮]

FEATURES	
Pure Sine Wave	✓
Solar Compatible	✓
Built-in Galvanic Isolation Transformer	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Static-By-Pass	✓
Freedom To Choose Battery Size	✓
Crest Factor	5:1
6 S Battery Charging	✓
90V Charging	✗
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓



150 Ah/96V(14400Whr)



150 Ah/180V(27000Whr)

#Values displayed are for reference only.

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

Available Models

Model	Dimension (LxWxH) in mm	Weight
5KVA/96V (1P-1P)	350x325x580	50 Kg
7.5KVA/180V (1P-1P)	350x615x525	77 Kg
10KVA/180V (1P-1P)	350x615x525	98 Kg

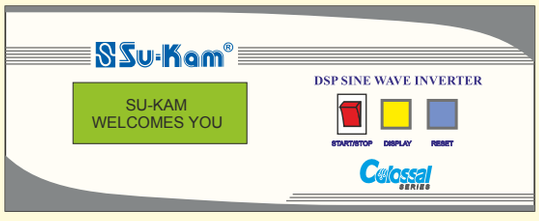
*Depending on Model Capacity

Colossal (3P-3P) - Pure Sine Wave Inverter - Standard Range

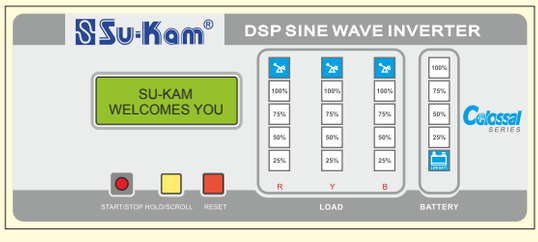
PURE SINE WAVE INVERTER

Colossal (3P-3P)
5-100KVA/360V

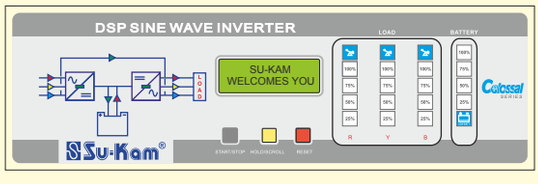
FRONT PANEL VIEW OF 4KVA TO 20KVA
PURE SINE WAVE INVERTER



FRONT PANEL VIEW OF 25KVA TO 40KVA
PURE SINE WAVE INVERTER



FRONT PANEL VIEW OF 50KVA TO100KVA
PURE SINE WAVE INVERTER



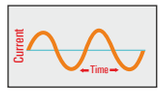
LCD MESSAGES

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% [■■■■■■■■■■]

#Values displayed are for reference only.

Su-Kam's Pure 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.

KEY FEATURES



Supply Pure Power - Pure 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/ATMs, hospitals, petrol pumps and shopping malls to name a few.

Noiseless Operation - Colossal inverter is a unique product which eliminates the need of heavy power back up systems/loads while avoiding any sound or noise pollution.

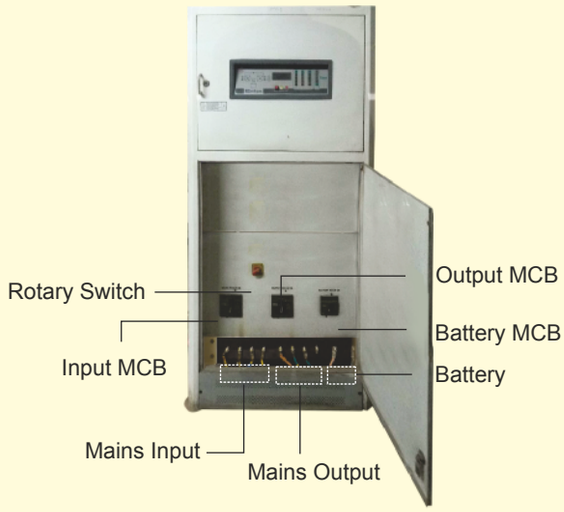
ATM 6S Charger - ATM with pulse charger is used for the first time in invertors. Till now this feature was available only in online UPS. ATM stands for Auto Trickle Mode. It is fully software controlled.

FEATURES

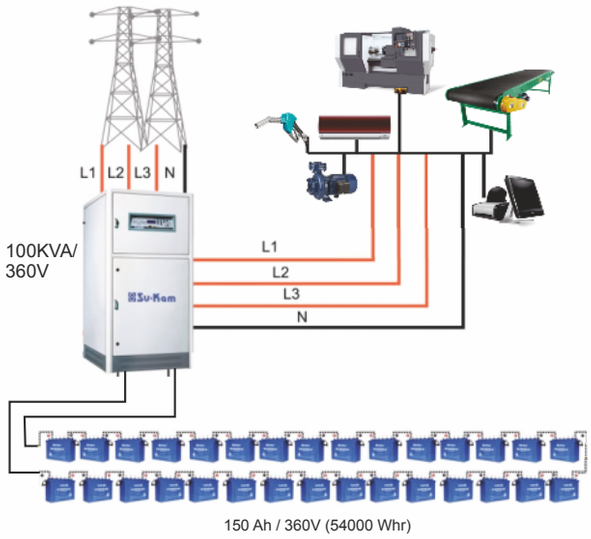
- Safe for sensitive equipment: The power produced by Su-Kam Sine Wave Inverter – Colossal Series is 100% pure power, which is purer than the power supplied from the grid. This makes it absolutely safe to run even the most sensitive electronic equipment.
- Heavy Duty Usage: Su-Kam's Pure Sine Wave Inverters – Colossal Series, available as standard as well as customized solutions from 5 KVA to 100 KVA, are ideal for all types of commercial establishments like offices, showrooms, shopping malls, hospitals, hotels, schools, labs, petrol pumps, banks, telecom towers, ATMs and BPOs etc.
- Pollution Free: Unlike a generator, Su-Kam's Pure Sine Wave Inverter – Colossal Series runs on batteries and is therefore completely non-polluting and can be comfortably placed in any working environment.
- Low Running Cost: Su-Kam's Pure Sine Wave Inverters – Colossal Series produce and draw only the required amount of power from the battery, thereby maintaining a low running cost.
- High Efficiency and Reliability: The technology used and the choice of high performance components mean that the Colossal Series can obtain exceptional performance and efficiency levels, from very low footprint and dimensions.
- Advanced Communication: The Colossal Series is equipped with an advanced LCD display which provides information regarding status, remedial actions needed, battery level, load level to name a few.
- Battery Care System: The Colossal Series consists of a range of features designed to optimize battery performance and enhance battery life.

Colossal (3P-3P) - Pure Sine Wave Inverter - Standard Range

Colossal (3P-3P)



Back Panel



#Values displayed are for reference only.

- Solar Compatible - This Pure Sine Wave inverter is solar compatible by which you can also use free solar power for load running as well as battery charging.

Front Panel Switches: Start/Stop, Display and Reset

1. Display Button: Press Start/Stop button to switch ON & OFF the inverter system
2. Display Button: Press the display button to switch between holding & scrolling
3. Reset Button: To reset the inverter system press Reset Button for 10 secs. The control card will then reset.
4. Configuration Settings: To set Parameters like Output Voltage, Battery Low Cut Voltage, Inverter No Load Shut Down etc.

FEATURES	
Pure Sine Wave	✓
Solar Compatible	✓
Built-in Galvanic Isolation Transformer	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Static-By-Pass	✓
Freedom To Choose Battery Size	✓
Crest Factor	5:1
6 S Battery Charging	✓
90V Charging	✗
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

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

Available Models

Model	Dimension (LxWxH) in mm	Weight
7.5kVA/360V (3P-3P)	450x470x735	123 Kg
10kVA/360V (3P-3P)	450x740x735	133 Kg
15kVA/360V (3P-3P)	450x740x735	160 Kg
20kVA/360V (3P-3P)	450x740x735	190 Kg
30kVA/360V (3P-3P)	600x780x1000	285 Kg
40kVA/360V (3P-3P)	600x780x1000	330Kg
50kVA/360V (3P-3P)	755x835x1460	390 Kg
60kVA/360V (3P-3P)	755x835x1460	240 Kg
80kVA/360V (3P-3P)	800x1035x1560	285 Kg
100kVA/360V (3P-3P)	800x1035x1560	330 Kg

*Depending on Model Capacity

What is Solar Power?

Solar Power is the process of converting the energy of the sun into electricity using Solar Photo -Voltaic cells.

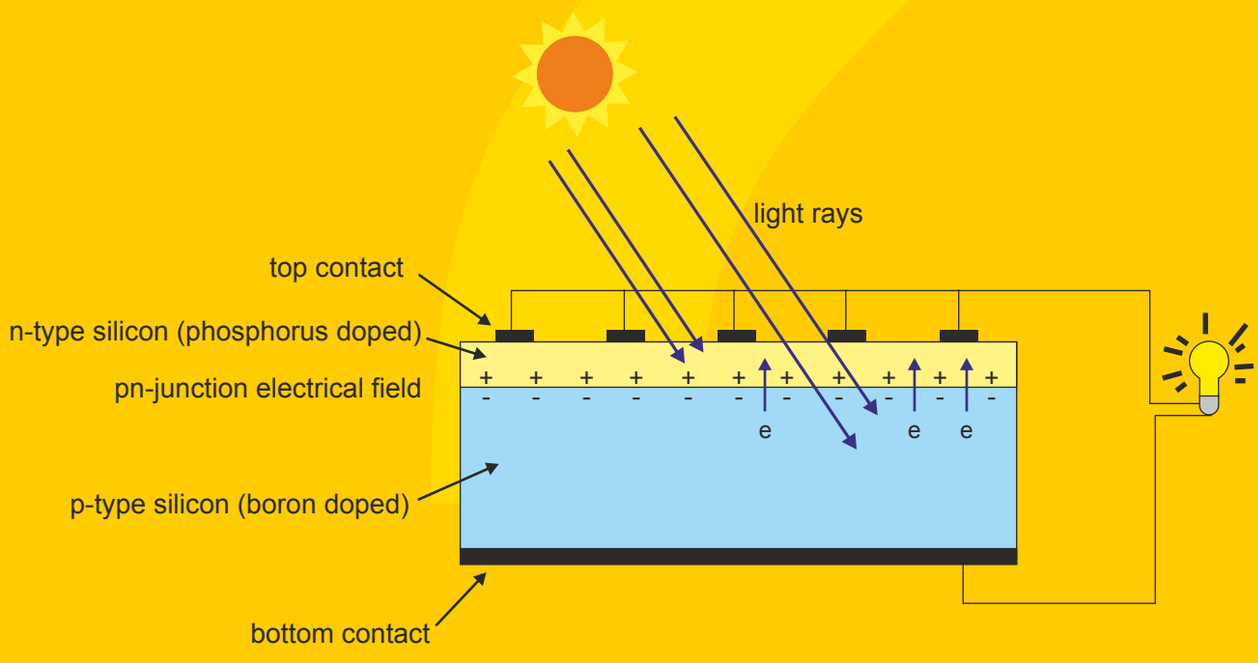
Solar Photo Voltaic Cell

The word photovoltaic is derived from two words - photon which means light & voltaic which is related to electric voltage. This means that a Photo – Voltaic (PV) Cell is a cell which converts light energy into Electricity using Semi-Conductor Material by Photovoltaic Effect; a phenomenon in which the semi-conductor absorbs light energy and generates Voltage or Electric current.

What are Solar PV Modules / Panels?

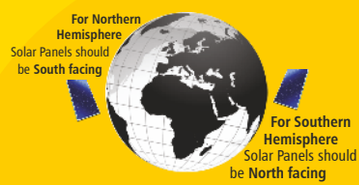
A solar panel is a collection of solar cells and is designed to absorb the sun's rays as a source of energy for generating electricity. Lots of small solar cells spread over a large area can work together to provide enough power to be useful. The more light that hits a cell, the more electricity it produces.

BlockDiagram of PV Cell

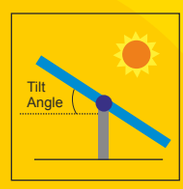


Mandatory Checks Before Installation

Shadow free :
Area of Installation must be shadow free



Panels Direction:
Panels should face the sun. This is dependent on the hemisphere of the installation



Tilt Angle:
Tilt angle should be equal to Latitude angle of the area of installation

Wire Thickness:
4 sq. mm wire for panel interconnection

Types of Solar Panel

Mono Crystalline

- Manufactured from single Si crystal
- Performance best at standard temperature
- Requires least area for a given power

Poly Crystalline

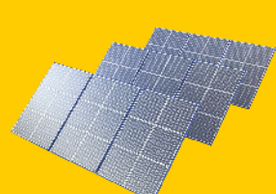
- Manufactured by fusing different crystals of Si
- Performance best at moderately high temperature
- Requires least area for a given power

Thin Film

- Manufactured by depositing 1 or more layers of PV material on substrate
- Performance best at high temperature
- Requires least area for a given power

Panel and Array Formation

PV Array



A combination of several Solar Panels form an array

PV Panel

A 12V PV Panel will have 36 cells (36x.5V)=18V (max)
A 24V PV Panel will have 72 cells (72x.5V)=36V (max)

PV Cell

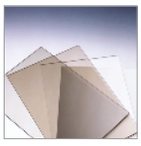
An individual PV cell typically produces 0.5 Volts. The cells are joined in an array to form a solar panel and produce required power

Types of Solar Power Systems

1. **DC System**
2. **Off-Grid System**
3. **On-Grid System**
4. **Hybrid System**

7 MUST HAVE FEATURES IN YOUR SOLAR PANELS

Your ideal solar panels should be so efficient that they generate electricity from sunrise to sunset without fail. To eliminate shading, gap between module frame and solar cells is optimized.



They should have the best quality solar cells which make the solar panels highly efficient. The cells are laminated between UV resistant polymer (EVA) and high transmission toughened glass surface which helps in extending the life of solar panels and lessen the power degradation.

They should have thick iron glass to help you cut down on solar wastage.

They should be able to withstand extreme and harsh weather conditions and have a long life.

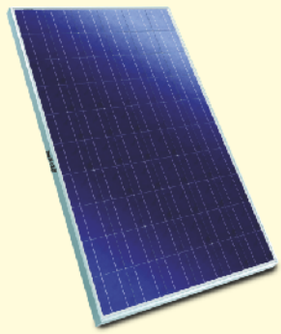
There should be a diode in the solar panel. This diode protects the panel from damage in case there is flow of external current.

They should have MC4 connectors that you can just plug in. This protects from power leakage from exposed wires. This in turn increases the efficiency of the solar system and maximizes its potential.

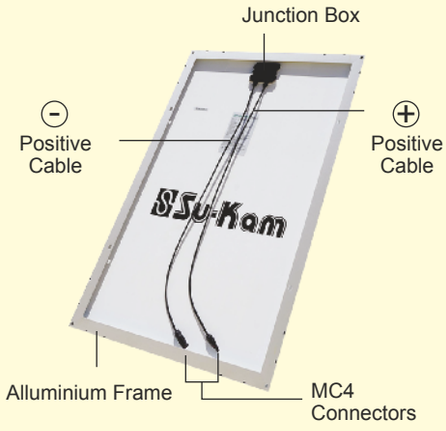
The quality of the junction box at the back of the solar panel is crucial. It is where the internal wiring that connects the cells in a panel converges and is connected to the external wire. A good junction box keeps corrosion at the terminals to a minimum as it excludes water coming in.

Solar Panel

Solar Panel
40, 50, 100, 150Wp / 12V
250, 260, 320Wp / 24V



Back Panel

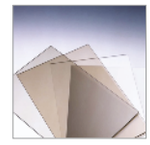


Su-Kam Solar Panels are manufactured using latest technology and best quality materials. These solar panels are especially designed to bear extreme weather conditions anywhere in the world. They have been awarded and certified for being highly efficient, long-lasting and reliable – they are 100% made in India for India and the world. Get ready to make the best investment ever: buy solar panels now and save money on electricity bills for 25 years!

KEY FEATURES

Su-Kam solar panels are so efficient that they generate electricity from sunrise to sunset without fail. To eliminate shading, gap between module frame and solar cells is optimized.

They have the best quality solar cells which make the solar panels highly efficient. The cells are laminated between UV resistant polymer (EVA) and high transmission toughened glass surface, which helps in extended the life of solar panels and lessen the power degradation.



They are able to withstand extreme and harsh weather conditions and have a long life.

FEATURES

- Maximum power generation to help you make more solar money.
- Shock-resistant thick iron glass to help you cut down on solar wastage.
- High grade solar cells to give you long-lasting solar panels.
- Best quality raw material to give you best performance even in extreme weather conditions.
- Anodized aluminium frame gives you freedom from maintenance.
- IEC approved Su-Kam's solar panels are so high in quality that the prestigious International certification body, IEC has certified the solar panels.

Capacity (Wp)		40	50	100	150	250	260	320
Module Volt (V)		12	12	12	12	24	24	24
Module Size	Length - L(mm)	665	665	666	666	982	992	992
	Height - H(mm)	435	555	1006	1483	1639	1656	1976
	Width - W(mm)	25	25	35	35	35	35	42
Module Weight (Kgs)		3.10	3.96	7.50	11.20	17.30	17.30	21.80
Cell in series		36	36	36	36	60	60	72
Mounting Hole (X-Axis) (mm) 956		629	629	630	630	946	956	

#Values displayed are for reference only.

What is Solar Charge Controller?

Solar Charge Controller is an electronic device which controls the variation of the power produced from Solar PV to charge the battery as well as run the DC Load.

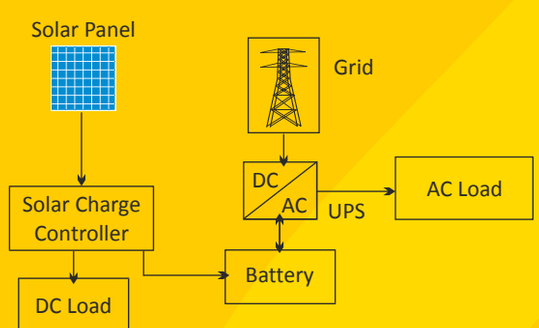
Why do we need a Solar Charge Controller?

A Solar Charge Controller is basically a voltage and/or current regulator to keep batteries from overcharging. It regulates the voltage and current coming from the solar panels going to the battery. Most 12 volt panels put out about 16 to 18 volts, so if there is no regulation the batteries will be damaged by overcharging.

Application of Solar Charge Controller

Solar Charge Controller is used in the solar applications and is also called **solar battery charger**. Its function is to regulate the voltage and current from the solar arrays to the battery in order to **prevent overcharging** and also over **discharging.**

Block Diagram of Solar Charge Controller

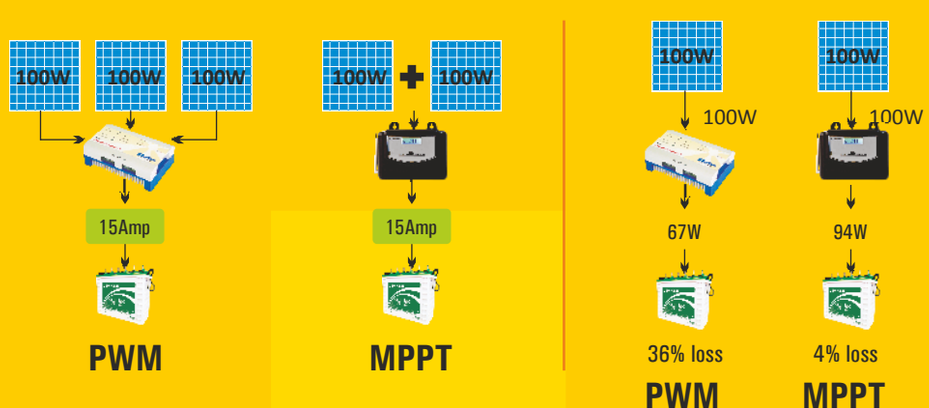


Types of Solar Charge Controllers

There are two different types of solar charge controllers. They are:

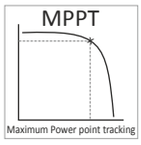
PWM Solar Charge Controller : PWM (Pulse Width Modulation) Solar Charge Controller is an electronic device which works to match the voltage of panel to voltage of battery. It pulls down the panel's output voltage in doing so.

MPPT Solar Charge Controller: An MPPT Controller, or Maximum Power Point Tracker is an electronic DC to DC converter that optimizes the match between the solar array (PV panels) and the battery bank. They convert a higher voltage DC output from solar panels down to the lower voltage needed to charge batteries **and convert extra voltage of panel into current** which increases the output from the solar system.



Solar Charge Controller

10 MUST HAVE FEATURES IN YOUR SOLAR CHARGE CONTROLLER

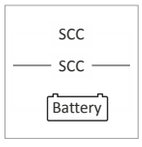


Your Solar Charge Controller should be Maximum Power Point Tracking (MPPT). MPPT Solar Charge Controller ensures that there is minimal internal loss of the power that is generated. Its efficiency is upto 35% more than a normal Solar Charge Controller.

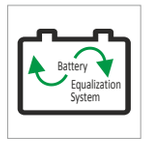
Your device should be able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

Solar Charge Controller can also be used as a solar electronic charging station. It can easily and cost effectively charge e-rickshaws and other electronic vehicles. It provides pure DC current to the battery increasing its performance and life.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.



Solar Charge Controllers should be such that they can be used in parallel connection to increase their Ampere. In case you want to extend the output of your existing solar system, all you have to do is add a Solar Charge Controller in parallel and it will be done.



It should have Equalization Feature to remove build-up of sulphate. Over a period of time the sulphuric acid in batteries causes build up of sulphate on battery plates. If this sulphate buildup is not removed it makes the battery weak. So a good charge controller gives the battery a high 'equalizing' charge automatically every month.

Protection from Under charging and Over charging: If DC load is directly connected to the battery (without Solar Charge Controller) then there would be a possibility of getting over charge and under charge. Solar Charge Controller should have protection from battery over charging and under charging.

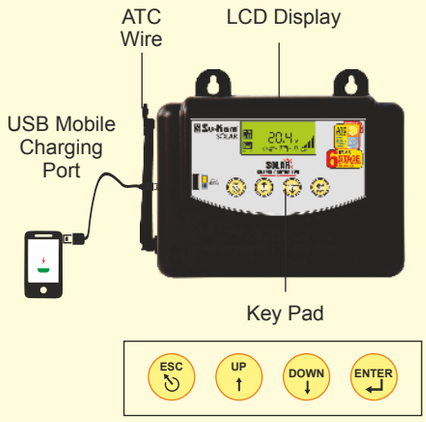
The right Solar Charge Controller should have 6 Stage Charging Technology that increases battery life. 6 stage charging is designed to charge the batteries in the most efficient way while making the charging process quite quick. It increases battery life and reduces the need for water topping.

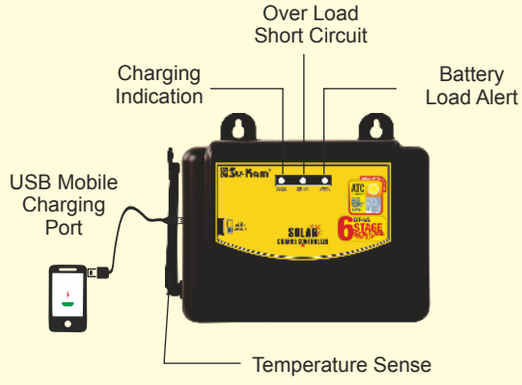
Protection from Reverse Current: Current from the battery can leak back to the solar panels and drain the batteries. A SCC protects from reverse flow of the current.

ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging by decreasing boost voltage and undercharging by increasing boost voltage.

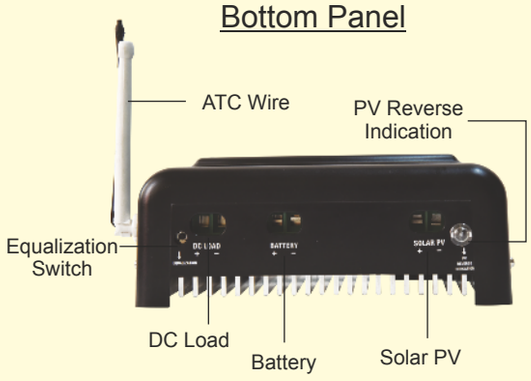
Solar Charge Controller - Economy Range

PWM Series
12V/24V/30A LCD
36V/48V/60A LCD





Bottom Panel



#Values displayed are for reference only.

Su-Kam's Solar Charger Controller is a system with advanced MOSFET based PWM Technology. The term "charge controller" refers either to a stand-alone device or a control circuitry integrated one within a battery pack, battery-powered solar device or a battery charger.

The controller is for off-grid solar systems. This protects the battery from getting over charged using the solar module and over discharged by the loads. The charging process has been optimized for long battery life and improved system performance.

The comprehensive self-diagnostics and electronic protection functions prevent damage from installation mistakes or system faults.

KEY FEATURES

Su-Kam Solar Charge Controller are able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

Su-Kam Solar Charge Controller can also be used as a solar electronic charging station. It can easily and cost effectively charge e-rickshaws and other electronic vehicles. It provides pure DC current to the battery, increasing its performance and life.

Solar Charge Controller Automatically senses the battery voltage and sets itself accordingly. It uses MOSFET as an electronic switch, without any mechanical switch.

ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging and undercharging by decreasing boost voltage by increasing boost voltage.

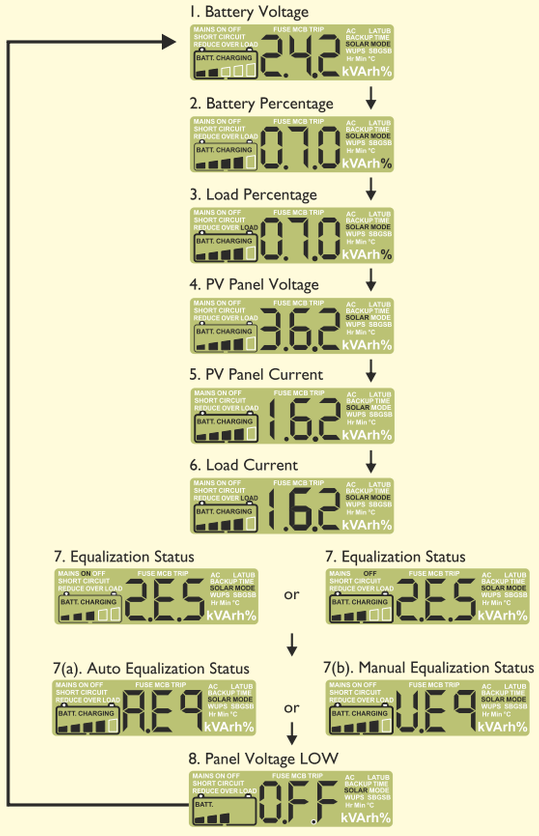
FEATURES

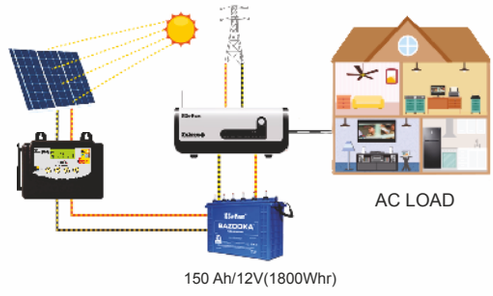
- Excellent EMC design.
- Nominal system voltage automatic recognition.
- Highly efficient PWM Solar Charge Controller series increases battery life and improves the performance of the solar system.
- Use MOSFET as an electronic switch without any mechanical switch.
- Widely used, automatically recognizes day/night.
- Graphics dot-matrix LCD screen and HMI (human-machine interface) with 4 buttons, integrated menu display and operation.
- Humanized design of browser interface for convenience of operation.
- Full control parameters setting and modification, diversified load control mode.
- Gel, Sealed and Flooded battery type options.
- Adopt temperature compensation, correction algorithm for charging and discharging parameters automatically and improve battery life.
- Electronic protection from overheating, overcharging, over discharging, over load, and short circuit.
- Reverse protection: any combination of solar module and battery.

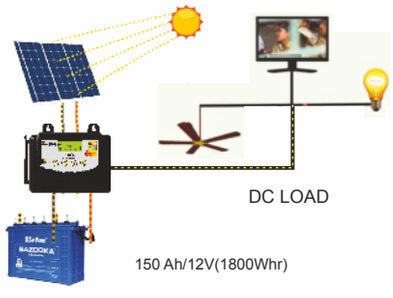
Solar Charge Controller - Economy Range

PWM Series
12V/24V/20A (Solar-Con*)
12V/24V/30A LCD
36V/48V/60A LCD

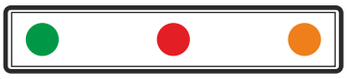
LCD SCREEN FLOW DIAGRAM







LED Indications:
There are three LEDs located on the front panel. They show the following condition/parameters:



CHARGING INDICATION | OVER LOAD/ SHORT CIRCUIT | BATTERY LOAD ALERTS

Parameter	LED Color	Color	ON Time (in second)	OFF Time (in second)
Charging	Green (LED 1)	Green	2	2
Charged			Always ON	
PV High			0.5	4
PV High Current			0.5	0.5

Parameter	LED Color	Color	ON Time (in second)	OFF Time (in second)
Equalization (Auto)	Red & Green (LED 2)	Red	Always ON	
Equalization (Auto) In progress		Red	1	1
Equalization (Manual)		Green	Always ON	
Equalization (Manual) In progress		Green	1	1
Equalization (OFF)			Always OFF	
High Temp	Red & Orange (LED 3)	Orange	1	3
Battery Low		Red	0.5	2
Battery High		Red	0.5	0.5
Overload		Orange	2	2
Short Circuit		Orange	0.5	0.5

FEATURES	
Dusk to Dawn	✓
MPPT Algorithm	✗
Load Controller For DC Load	✓
Battery Charging AC Power	✗
ATC	✓
In-Built Battery	✗
LCD Display	✓
Overload & Short Cicuit Protection	✓
RS 232/485/Wi-Fi/GSM/Bluetooth Connectivity	✓

Available Models

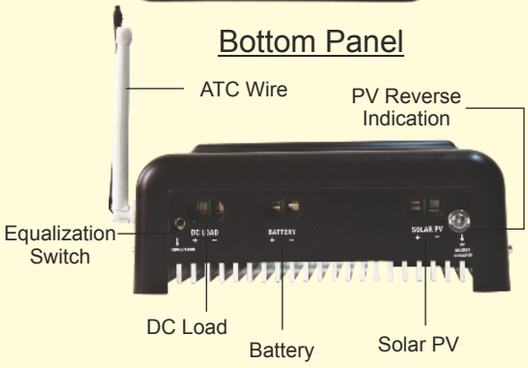
Model	Dimension (LxWxH) in mm	Weight
36V/48V/60A LCD	134x131x38	0.35 Kg
12V/24V/30A LCD	210x79x170	0.56 Kg
36V/48V/60A LCD	207x140x75	1.5 Kg

*Depending on Model Capacity

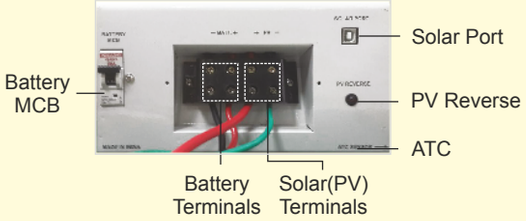
Solar Charge Controller - Premium Range

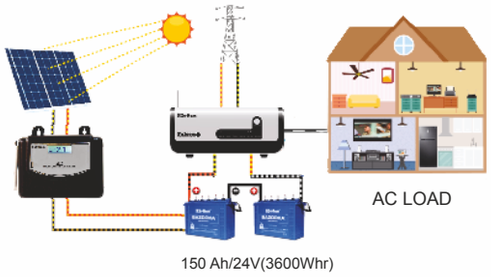
MPPT Series
25A/24V, 24V/48V/40A LCD
96V/120V/180V/40A-55A LCD
180V/240V/360V/40A LCD

Bottom Panel



Bottom Panel





150 Ah/24V(3600Whr)

#Values displayed are for reference only.

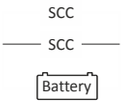
MPPT Charger takes input from the panel and delivers maximum power to the battery. It gives upto 30% more power as compared to a normal Solar Charge Controller.

KEY FEATURES

Solar Charge Controller can also be used as a solar electronic charging station. It can easily and cost effectively charge e-rickshaws and other electronic vehicles. It provides pure DC current to the battery, increasing its performance and life.

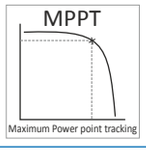
Su-Kam Solar Charge Controller has 6 Stage Charging Technology that increases battery life. 6 stage charging is designed to charge the batteries in the most efficient way while making the charging process quite quick. It increases battery life and reduces the need of water topping.

ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging by decreasing boost voltage and undercharging by increasing boost voltage.



Su-Kam Solar Charge Controllers are designed in such a way that they can be used in parallel connection to increase their Ampere. In case you want to extend the output of your existing solar system, all you have to do is add a Solar Charge Controller in parallel and it will be done.

Su-Kam Solar Charge Controller are able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.



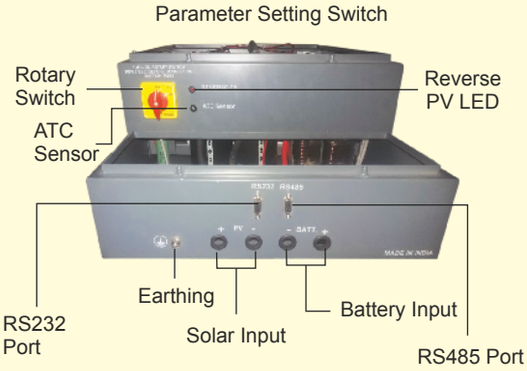
MPPT Charge Controller tracks the maximum power generated by solar panels and transfers the same to the battery with minimal internal losses.

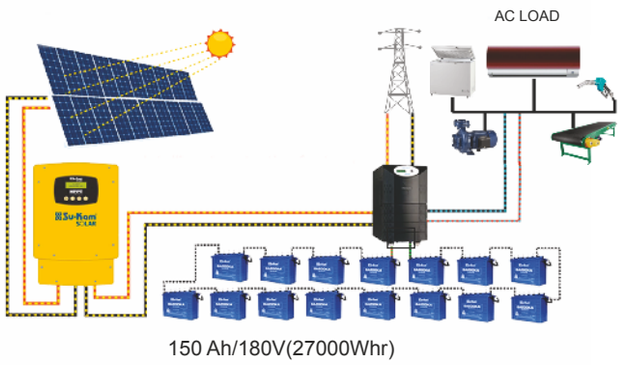
FEATURES

- MPPT Charge Controller tracks the maximum power generated by solar panels and transfers the same to the battery with minimal internal losses.
- The In-built Sensor in MPPT senses the outside temperature and regulates battery charging i.e. over-charging or under-charging by controlling the boost voltage of the battery.
- MPPT uses DT-6S six stage charging technology for efficient charging and longer battery life.
- The MPPT Charge Controller enables you to automatically switch from one battery system to a double battery system without changing the charge controller.
- The Advanced Solar Charging Technology in MPPT smartly generates voltage to shake the Battery Electrolyte to ensure efficient charging.

Solar Charge Controller - Premium Range

MPPT Series
24V/48V/40A LCD
96V/120V/180V*/40A-55A LCD
180V*/240V/360V/40A LCD

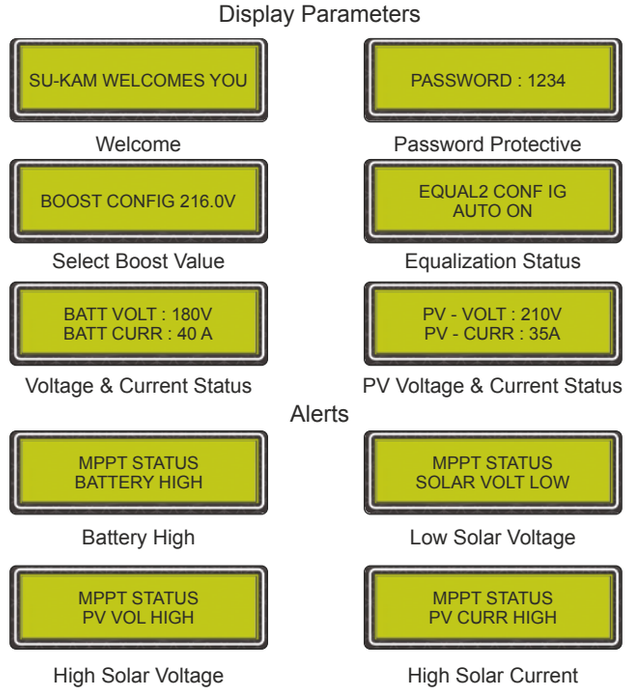




150 Ah/180V(27000Whr)

- The Intelligent Micro Processor in MPPT controls all the internal processes smoothly.
- The Solar Charge Controlling device in MPPT regulates battery current and provides power voltage high current protection.
- The Micro Controller and Digital Signaling processing in MPPT charge controller provides overload and short circuit protections.
- MPPT Solar Charge Controller protects the reverse battery current flow from the battery to solar array at night.
- The Micro-Controller in MPPT helps protect against reverse polarity of the battery.
- Micro Controller and Digital Signaling Processing Technology in MPPT saves battery during High Voltage Condition.

Display Parameters



FEATURES	
Dusk to Dawn	✓
MPPT Algorithm	✓
Load Controller For DC Load	✓
Battery Charging AC Power	✗
ATC / 6S	✓
In-Built Battery	✗
LCD Display	✓
Overload & Short Cicuit Protection	✓
RS 232/485/Wi-Fi/GSM/Bluetooth Connectivity	✓

Available Models

Model	Dimension (LxWxH) in mm	Weight
24V/48V/40A LCD	260x200x125	2.8 Kg
96V/120V/180V*/40A-55A LCD	597x322x200	25 Kg
180V*/240V/360V/40A LCD	597x322x200	23 Kg
12V-24V/25A	216x134x73	1.8 Kg

*Depending on Model Capacity

What is a Solar DC System?

A Solar DC system is an innovative and environment friendly system that helps you harness solar energy for your home. In a Solar DC System, PV modules covert light energy into DC electrical energy. This DC power flows through Solar Charge controller & stores in battery/battery bank. SCC (solar charge controller) manages the charging from PV Modules to battery & it also runs the DC Load.

It is specially designed for areas where frequent power cuts are common or where there is no grid electricity. Today, more and more electrical appliances run on DC. A DC Solar System helps run equipment efficiently and does not waste energy. It also helps protect the equipment.

Why do we need Solar DC System?

- DC appliances take approximately 3 times less power to run because they are designed to work on voltage as low as 12V.
- In the case of DC System, backup time will be 3 times more as compared to AC on the same battery bank because DC appliances need low power for functioning.
- Replacing AC appliances with DC can reduce electricity bills by upto 60%.
- DC Systems are safer as compared to AC systems because DC appliances are designed to work on voltage as low as 12 V which is quite safe.

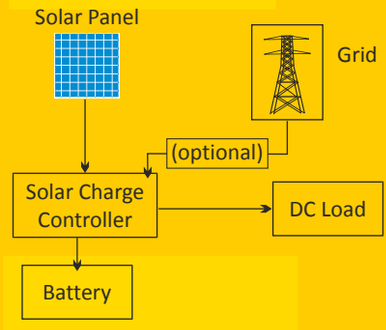
Advantages

- 3 times more backup as compared to AC System.
- 70 percent more power saving as compared to AC System.
- Reduce electricity bill by upto 60%.

Applications

All solar panels produce DC power. DC power is widely used in low voltage applications such as charging batteries, DC Fans, DC Lights, DC TV, automotive applications and other low voltage, low current applications.

Block Diagram of Solar DC System



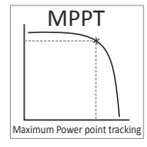
Solar DC System

8 MUST HAVE FEATURES IN YOUR DC SYSTEM

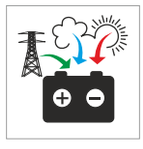
Should have an efficient Solar Charge Controller which can utilise maximum solar power to run the DC load and charge the Battery efficiently.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

Solar DC System should able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.



Should have efficient MPPT Solar Charge Controller to utilise maximum solar power and ensure least wastage and maximum output.



It should have the option to charge from the grid when needed. It must be a hybrid system and come with a grid charger. On cloudy days, the system will intelligently start charging via the grid and will smartly shift back to solar charging when there is enough sunshine. It always gives priority to charging via solar.

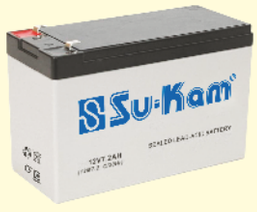
ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging by decreasing boost voltage and undercharging by increasing boost voltage.

Should be equipped with protection against overload and short circuit. It should be designed to automatically shut itself down should it encounter overload or short circuit.

DC System should have a USB Port for Mobile charging.

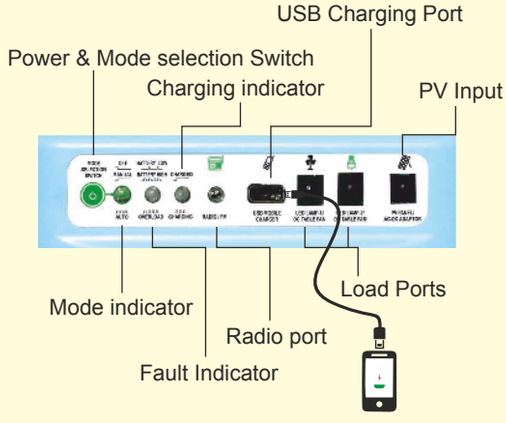
Solar Mini DC System - Economy Range

Solar Mini DC System



Built-in 7.2Ah/12V(86.4 Whr) SMF Battery

Front Panel

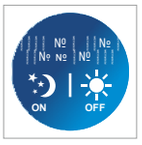


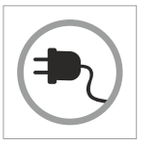
Su-Kam's Solar Mini DC System lights up your home with the power of sunlight. The electricity is stored in the battery and used for carrying load as per requirement. Solar Mini DC System is designed as an easy-to-install kit and comes with LED lamps with a capacity to light up your home for several hours. In the absence of sunlight, you can charge the system through an external charger by directly connecting to the mains. It has a compact system with 7.2Ah/12V SMF in-built battery and a controller that protects battery from overcharging or deep discharge.

KEY FEATURES

Zero Idle Current - Generally, other chargeable devices use little amount of stored power while in idle condition. But the Solar Mini DC System is smartly designed to consume zero power from the battery while in idle condition.

Dusk Till Dawn Sensor - Solar Mini DC System has an in-built sensor that automatically senses light and starts charging the battery and when it gets dark outside switches on the DC load thus making it complete automatic.





Grid Charging (Optional) - Solar Mini DC System has an additional option to charge it from mains as well. You can choose for either solar or grid charging facility.

FEATURE

- In-built Charge Controller - Solar Mini DC System regulates the power during battery charging and auto cuts when battery gets completely charged. It also controls the reverse current flow in the night to solar panel.
- Increase Battery life - Solar Mini DC System uses pure DC form of power to charge the battery. It not only provides safe charging but also increases the battery life by several years.
- High/Low Voltage Protection for Battery - An in-built control unit in Solar Mini DC System provides complete protection to the battery during high voltage situation.
- Deep Battery Discharge Protection - A compact control unit in SHLS protects the battery from deep battery discharge.
- Output Overload/Short Circuit Protection - The smart technology protects the Solar Mini DC System during output overload. It also protects the device from short circuits.

Mode of Operations

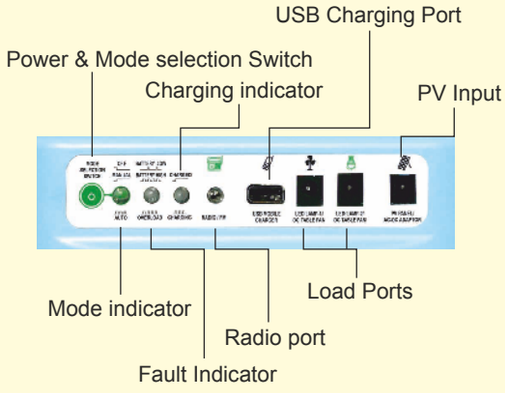
The Solar Mini DC System provides to operate in different modes of Operations. And the description of different modes given below:

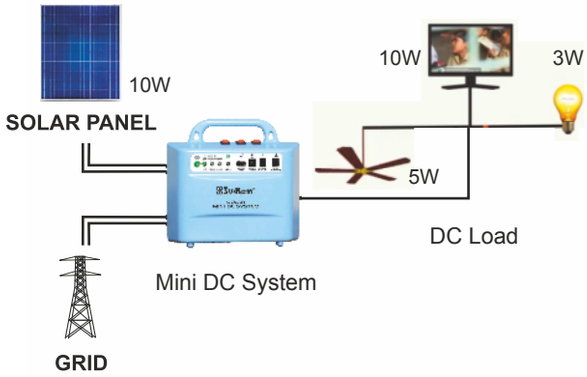
1. Auto Mode

   In Auto Mode, the mode selection indication will be blinking. The DC LED bulbs will be ON and OFF according to sunlight only when the individual switch for DC LED Bulbs are in ON position. DC LED Bulbs will be ON automatically in the evening and DC LED Bulbs will be OFF automatically in the morning. But Mobile/Radio will work independent of sunlight and can be used any time of the day.

Solar DC System - Premium Range

Mini DC System



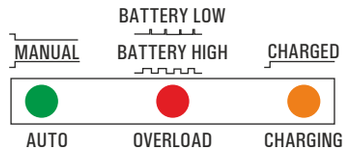


#Values displayed are for reference only.

2. Manual Mode - In Manual Mode, the manual mode indication is always ON. The DC LED Bulbs and Radio and USB Port will work according to individual ON/OFF switch position. If switch position is in ON state then respective DC LED Bulb or Radio and USB will be ON and if switch position is OFF state then respective DC LED Bulb or Mobile / Radio will be OFF. DC LED Bulb and Radio will work independent of sunlight.
3. OFF Mode - In OFF Mode there are two cases

   Case-1: If PV or AC-DC adaptor is available then battery charging continues and charging indication ON and Mode selection indication is OFF. DC LED Bulbs, USB and Radio will be OFF.

   Case-2: PV or AC-DC adaptor is not available then total system will be OFF and all the indications will be OFF.



S. No.	Parameter	LED Color	LED Status
	Mode Selection		
1.	Manual Mode	Green	Always ON
2.	Auto Mode	Green	Blink
3.	OFF Mode	Green	Always OFF
	Protection		
1.	Charging	Red	Fast Blink
2.	Charged	Red	Slow Blink
3.	Short Circuit	Orange	Fast Blink
4.	Over Load	Orange	Slow Bink
	Battery Charging		
1.	Charging	Green	Blink
2.	Charged	Green	Always ON
3.	PV Available	Orange	Blink
4.	Battery Overcharge	Red	Bink

FEATURES	
Dusk to Dawn	✓
MPPT Algorithm	✗
Load Controller For DC Load	✓
Battery Charging AC Power	✓
ATC	✗
In-Built Battery	✓
LCD Display	✗
Overload & Short Cicuit Protection	✓
RS 232/485/Wi-Fi/GSM/Bluetooth Connectivity	✓

Applications

Radio, Mobile Charging, DC LED Bulb, DC Fan, DC Television.

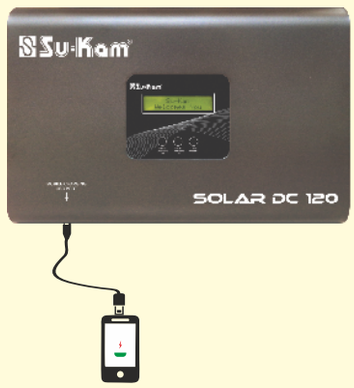
Available Models

Model	Dimension (LxWxH) in mm	Weight
Solar Mini DC System	224x82x206	2.7 Kg

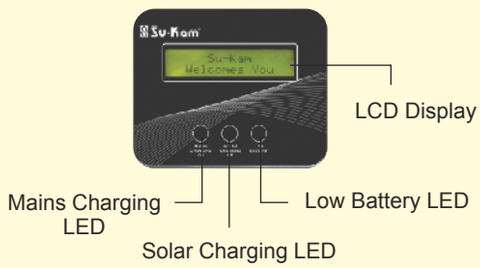
*Depending on Model Capacity

Solar DC System - Premium Range

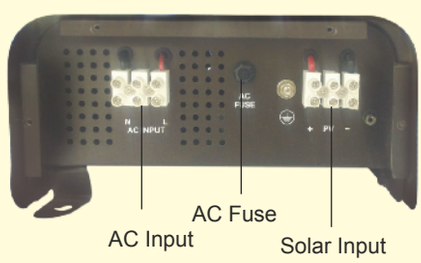
Solar DC 120

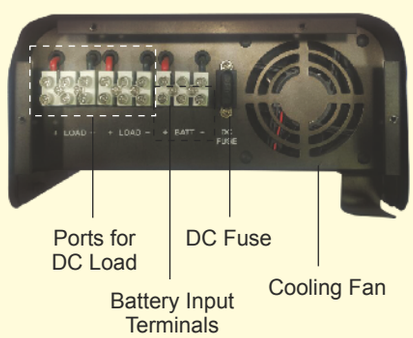


Display and LED Indicator



Side Panels

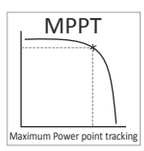




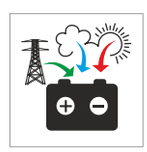
#Values displayed are for reference only.

The Su-Kam Solar DC System is an innovative environment-friendly, complete home lighting solar solution that has the power to remove darkness from millions of lives.
A standard package can light up to one 12V 25W DC (BLDC) fan, two 3W LED along with USB mobile charger point. DC light, DC fan, DC TV and other DC appliances up to 120W can be run very easily with this system.

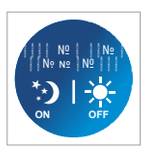
KEY FEATURES



Built-in MPPT Solar Charge Controller utilises maximum solar power and gives maximum output. 96% utilisation of Solar Power



It has the option to charge from the grid when needed. It is a hybrid system and comes with a grid charger. On cloudy days, the system intelligently starts charging via the grid and smartly shifts back to solar charging when there is enough sunshine. It always gives priority to charging via solar.



Dusk Till Dawn Sensor - Solar Home Lighting System (SHLS) has an in-built sensor that automatically senses light and starts charging the battery and when it gets dark outside, switches on the DC load thus making it completely automatic.

Su-Kam Solar Charge Controller are able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

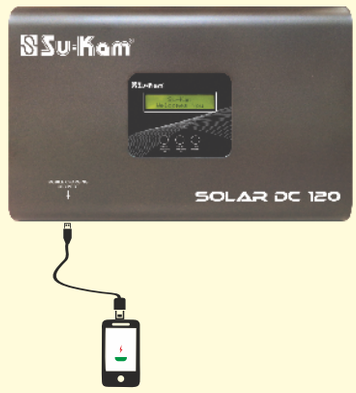
Su-Kam Solar DC System gives you big savings on your power bills. Running your load on DC uses lesser power and gives you longer backup. It is also an AC to DC converter that can give you the flexibility of connecting to the grid.

FEATURES

- Zero Idle Current - Generally, other chargeable devices use little amount of stored power while in idle condition. But the DC System is smartly designed to consume zero power from the battery while in idle condition.
- Dusk Till Dawn Sensor - DC System has an in-built sensor that automatically senses light and starts charging the battery and when it gets dark outside switches on the DC load thus making it completely automatic.
- Grid Charging (Optional) - DC System has an additional option to charge it from mains as well. You can choose for either solar or grid charging facility.
- In-built MPPT Charge Controller - DC System regulates the power during the battery charging and auto cuts when battery gets completely charged. It also controls the reverse current flow in the night to solar panel.

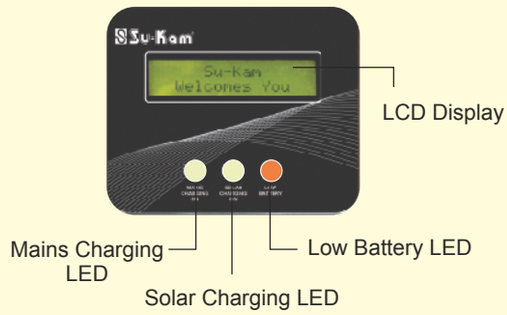
Solar DC System - Premium Range

Solar DC 120



- USB Charging Port - DC System has a USB charging port by which consumer can easily charge his mobile and other electrical appliances.
- LCD Display - DC System has LCD display by which consumer can easily monitor and control the system.
- Increase Battery life - DC System uses pure DC form of power to charge the battery. It not only provides safe charging but also increases the battery life by several years.
- High/Low Voltage Protection for Battery - An in-built control unit in DC System provides complete protection to the battery during high voltage situation.
- Deep Battery Discharge Protection - A compact control unit in DC System protects the battery from deep battery discharge.
- Output Overload / Short Circuit Protection - The smart technology protects the DC System during output overload. It also protects the device from short circuits.

Display and LED Indicator

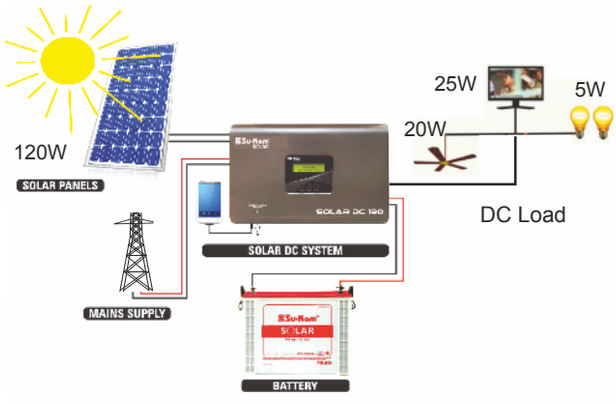


Display Parameters

SU-KAM WELCOME YOU	RUPEES SAVED 05400.0	PV VOLT: 17.2 V PV CURR: 06.8 A
Welcome Screen	Rupees Saved	PV Voltage/Current
MPPT_SCC: PV_LO	BATTERY V: 12. 1V LOAD CONTROL: ON	GRID CHARGE: OFF LOAD CURR: 03.0A
MPPT/Battery Percentage	Battery Voltage	Grid Charging ON/OFF Load Current

Faults

"MPPT_SCC: COMERR"	"MPPT_SCC: BAT_HI"	"MPPT_SCC: BAT_LO"
Communication fault in the System	Battery Voltage is high	Battery Voltage is Low
"MPPT_SCC: OV_LD "	"MPPT_SCC: L_SCKT"	"MPPT_SCC: PV_HI "
Load is more than the specified load	Short Circuit at the Load Terminal	PV Voltage is High
"MPPT_SCC: PV_LO "	"MPPT_SCC: PVH_IO"	"MPPT_SCC: PVH_I "
PV Voltage is Low	MPPT Charger is in PV high Current Protection Mode	MPPT Charger Current is in Regulation Mode



100 Ah/12V1200 Whr

FEATURES	
Dusk to Dawn	✓
MPPT Algorithm	✓
Load Controller For DC Load	✓
Battery Charging AC Power	✓
ATC	✓
In-Built Battery	✗
LCD Display	✓
Overload & Short Circuit Protection	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Applications
Radio, Mobile Charging, DC LED Bulb, DC Fan, DC Television and other normal DC Load.

Available Models

Model	Dimension (LxWxH) in mm	Weight
Solar DC 120 / 12V	325x115x225	3.8 Kg

#Values displayed are for reference only.

What is Solar OFF-Grid System?

An off the grid solar system is a system that is designed to work on it's own. It is not connected to the mains power supply or any other power grid. In the case of Off Grid System, PV modules covert light energy into DC electrical energy. This DC power flows through Solar Charge Controller & is stored in battery/battery bank. An inverter converts this stored DC power into AC & runs the AC Load. SCC (Solar Charge Controller) manages the charging from PV Modules to Battery.

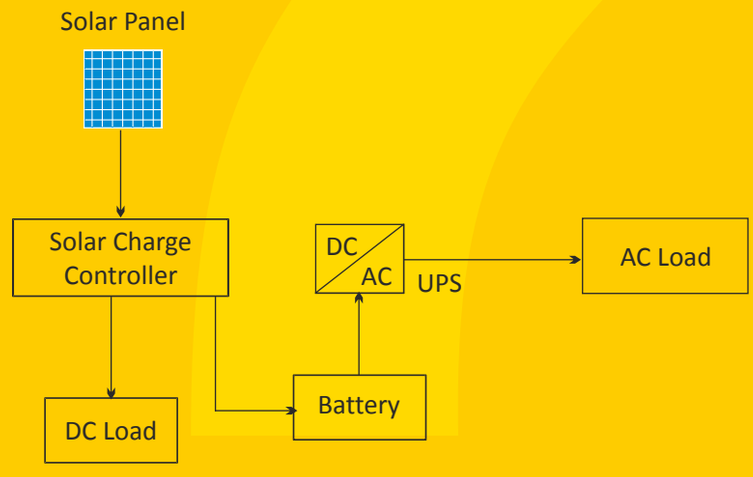
Why do we need Solar OFF-Grid System?

An off-grid solar system charges batteries through solar power. This leads to reduced dependence on the utility power. Off-grid solar systems are mostly used in those areas where utility power is not available or is more expensive.

Advantages

Advantages of an off the grid system are that you are completely energy independent, meaning that you do not get the negatives that come with using the main utility grid, such as power outages. An off the grid system can be installed virtually anywhere as long as there is sun. It stores the electricity provided so you will always have electricity to use as long as there is enough stored. You will not be receiving any power bills at all with an off the grid system because it is independent, making it a free power solution for your home.

Block Diagram of Solar OFF-Grid System



What is a Solar PCU?

A Power Conditioning Unit serves both as a solar charge controller and an inverter. It is a unique hybrid system which can charge batteries through solar and grid. As solar panels make DC electricity, it goes to the Solar PCU which converts DC into AC to power electrical load and stores the remaining DC electricity in batteries. When there is a deficit of solar power, Solar PCU intelligently runs the connected load on solar energy stored in batteries.

Why do we need a solar PCU?

A solar off-grid system / PCU can charge batteries through both solar and grid. However, what makes it a better option than a normal UPS / inverter is that it gives priority to solar while charging batteries and also while running load.

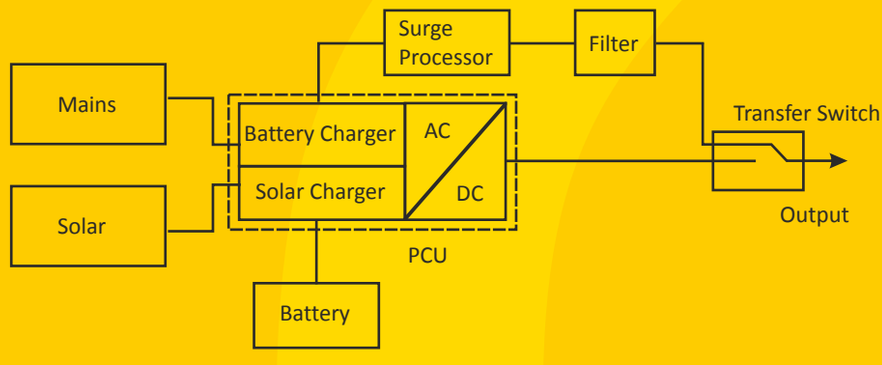
Advantages of Solar PCU

- In a normal inverter the battery is charged on grid and the load too is run on it. This leads to increased electricity bills. A solar off-grid system / PCU gives first priority to solar thus leading to decreased electricity bills.
- A solar off-grid system / PCU makes maximum utilization of solar since it gives first preference to load and then to battery charging.
- Gives backup in case of grid failure.

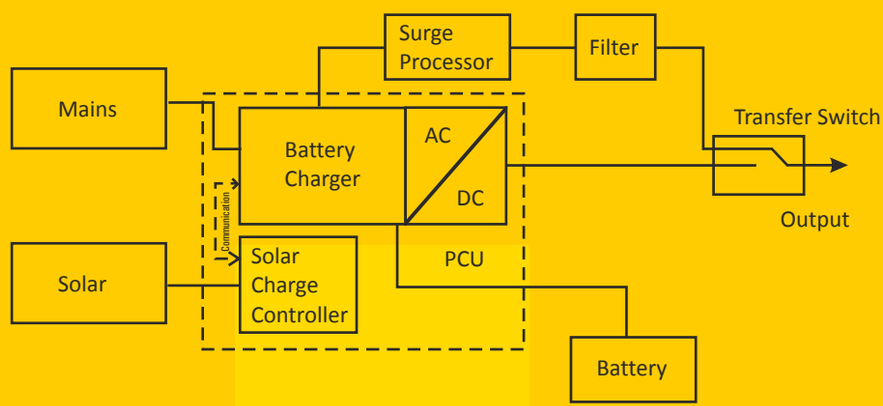
Types of Solar PCU

1. PCU - Internal Solar Charge Controller 2. PCU - External Solar Charge Controller

Block Diagram of PCU - External Solar Charge Controller



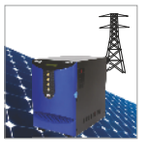
Line Diagram of PCU - Internal Solar Charge Controller



Solar PCU

10 MUST HAVE FEATURES IN YOUR SOLAR PCU

Solar Charge Controller should be external so that the service ability becomes easy. It can also be used as a DC System.

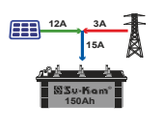


Your Solar PCU should always give priority to solar for running electrical load and use the rest of solar power for charging of battery bank. It should also let you decide when to connect to grid.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

Solar PCU should have an LCD screen on the systems or a good mobile App through which you can monitor or control the system online.

ATC can sense the outside temperature and regulate the charging of batteries. Protects your batteries from overcharging by decreasing boost voltage and undercharging by increasing boost voltage.

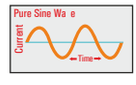


Intelligent Battery Charge Sharing - The main preference for battery charging is through Solar to reduce the power used from the Grid thus saving money on electricity bills.

Solar PCU should be able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time. Ordinary UPS requires at least a 150Ah battery to work even if you need less back-up time.

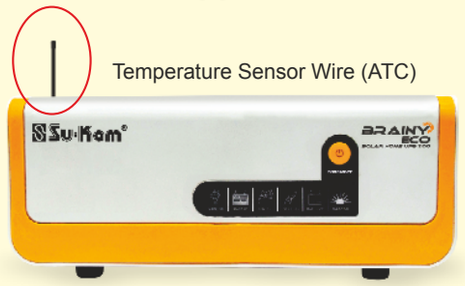
Your ideal Solar PCU should have Six Stage Charging. Latest DT-6S Technology removes the build-up of sulphate from battery plates which makes battery charging more efficient. 6-stage charging also helps prolongs battery's life and health.



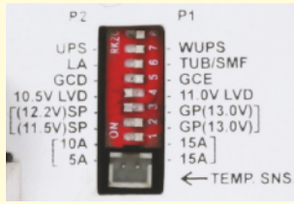
It should be Pure Sine Wave giving you clean energy and cost efficiency.

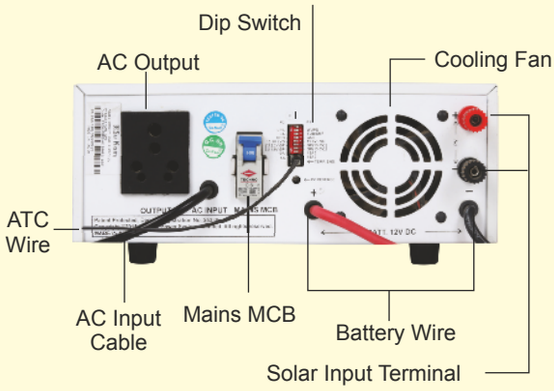
Brainy Eco Solar PCU - Economy Range

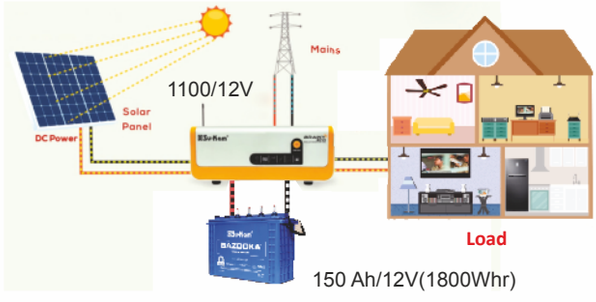
Brainy Eco 1100/12V



Back Panel



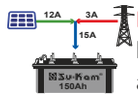




#Values displayed are for reference only.

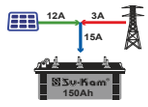
Brainy Eco Solar Hybrid UPS is India's FIRST of its kind. It gives you the flexibility of charging the batteries through both grid and solar - according to your choice. It has the dual function of being a normal UPS as well as an off - grid solar power generation system. Brainy Eco is the best in every parameter - best price, best technology, best design, best features and most importantly, best performance.

KEY FEATURES



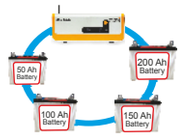
Brainy Eco as a PCU - Brainy Eco has a powerful **in-built Solar Charge Controller** by which it can work as a **Solar PCU** as well as normal UPS. It is based on the principle of Intelligent Charge Sharing.

Powerful Built-in 30 Amp Solar Charge Controller - It has the strength to run electrical appliances and charge the battery at the same time.



Intelligent Battery Charge Sharing - The main preference for battery charging is through Solar to reduce the power used from the Grid, thus saving money on electricity bills.

Brainy ECO as a Normal UPS - In a normal solar UPS we have to connect an entire solar system for a smooth functioning of the solar UPS but in the case of Brainy Eco it is not mandatory, you can use your system as a normal UPS. When you want to convert Brainy Eco into a solar UPS , it can be converted by the dip switch settings provided at the back panel.



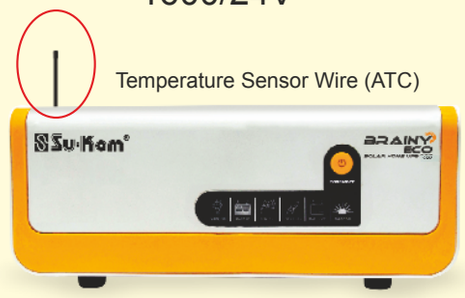
Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time. Ordinary UPS require at least a 150Ah battery to work even if you need less back-up time.

FEATURES

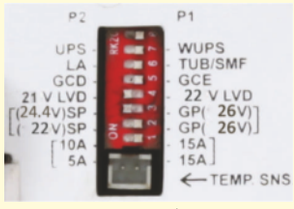
- 20KHz frequency design ensures noiseless operation of your UPS.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Intelligent Battery Charge Sharing - The main preference for battery charging is through Solar to reduce the power used from the Grid, thus saving money on electricity bills.
- Pure Sinewave UPS with inbuilt 30A Solar Charge Controller.
- ATC Technology provides adequate boost voltage as per the actual temperature conditions. Temperature sensor wire provided at the back panel increases battery life by minimum 6 months.
- User settable Grid/Solar Priority. The user can select Grid Priority switch in high power cut conditions and Solar Priority switch in low power cut conditions.
- Battery charging is done through Solar. It has 98% battery charging efficiency thus increasing battery life by at least 6 months.
- Powerful Charging even at low voltage of 90V.

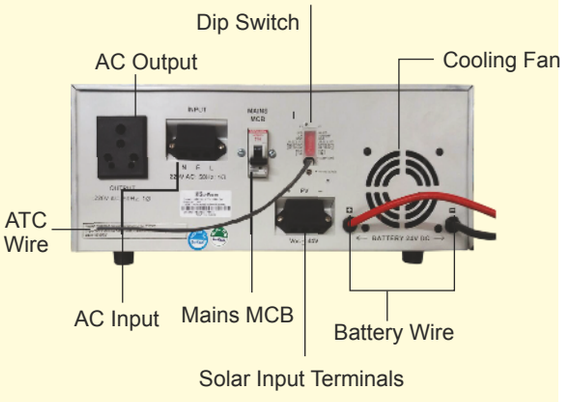
Brainy Eco Solar PCU - Economy Range

Brainy Eco 1600/24V

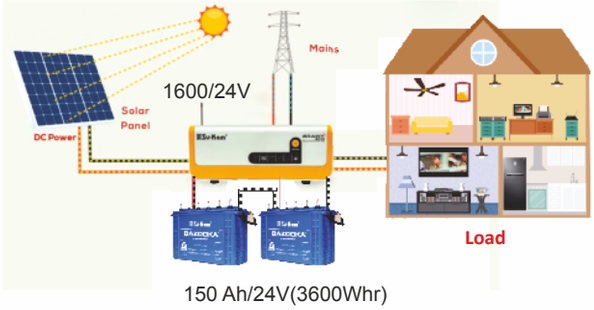


Back Panel





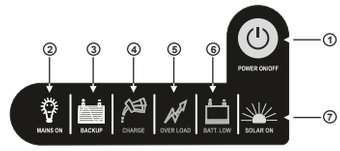
Brainy Eco 1600/24V



#Values displayed are for reference only.

- 6 Stage battery charging technology helps in increasing battery life and ensures necessary cool down time provided to the system as well as full utilisation of lead during the charging cycle.
- Low Voltage Disconnect (LVD) choosing the battery reserve higher than 10.5V i.e. 11V helps in recharging the battery fully and faster. It also acts like reserve power for emergency use with the help of DIP switch at the back panel.
- Automatic By-Pass System - in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.
- 4th Generation Processor - it is the most advanced and latest technology in power solutions. It is small in size, efficient, high speed processor and has the ability to multitask.
- Over Current Protection- Charging current from the Solar PV array is continuously monitored. If the charging current exceeds 30 amperes, then Charge Controller stops further charging. The Charge Controller restores the charging process after 3.5 minutes automatically.
- Reverse Current Flow Protection- Solar Charge Controller blocks any flow of current from the battery to Solar PV array .
- PV Panel Current Reverse Connection Protection- When PV positive and negative wires are reversed at PV terminals then only LED glows at the back panel.

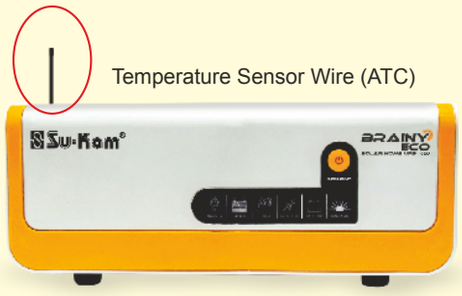
LED INDICATIONS

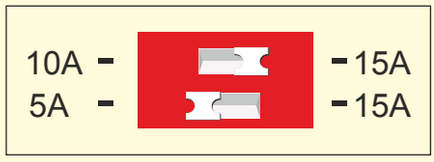


1. ON/OFF Switch: This glows continuously to indicate the UPS is in power ON mode and in power OFF mode the LED does not glow.
2. MAINS ON: This LED display icon glows to show that the mains grid power is available.
3. BACKUP: This LED display icon glows when mains grid power is not available/connected and the UPS is providing back up through solar or battery.
4. BATTERY CHARGING/CHARGED: This LED display icon glows in an on-and-off pattern with Green color during charging the batteries from main grid power, it blinks in Yellow color during batteries charged through Solar and it blinks in both colors while batteries get charged through Solar & Grid. When battery is fully charged it glows continuously. If ATC wire is connected/enabled then charging indication will blink fast after every 30 sec.
5. OVERLOAD: This LED display icon glows in red in an on-and-off pattern along with the buzzer beeping incase of overload condition. The UPS will try maximum 8 times before shutting down if the overload is not reduced. It can be reset by reducing the load and then switching OFF the power button on the front panel and switching it ON after 3 seconds.
6. SHORT CIRCUIT: This LED will glow continuously along with buzzer beep in case of a short circuit in the system output load. The UPS will try maximum 4 times before shutting down. After this the short circuit has to be removed and the UPS has to be reset by switching off the power button on the front panel and switching it on after 3 seconds.
7. BATTERY LOW: This LED display icon glows in red in an on-and-off pattern along with buzzer beep to indicate low level of battery charge or battery close to discharge. As the battery voltage reaches the selected cut-off limit, which is either 10.5V / 11V, the UPS will shut down and the LED icon will glow in red continuously. The UPS will resume working only after battery start charging again from mains.
8. Solar ON: This LED icon will glow in Yellow color when solar power is available; in the case of solar off or solar power is not available, it glow in Green color.

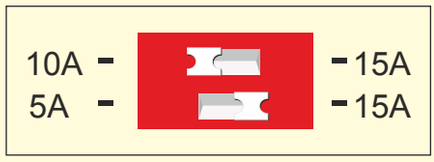
Brainy Eco Solar PCU - Economy Range

Brainy Eco
1100/12V & 1600/24V



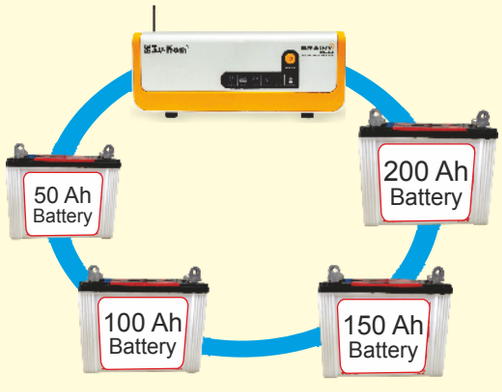


M1



M2

M3



Charge all size of Batteries

#Values displayed are for reference only.

There are 3 modes for battery capacity and Solar Panel selection: M1, M2 & M3

Brainy Eco 1100/12V		
Mode	Battery (Ah)	Panel (W)
M1	45 - 75 Ah	80 -120W
M2	100 - 135 Ah	150-250W
M3	150 - 180 Ah	300 -350W
M3	150Ah x 2*	400-500W

CAUTION: For 300W Solar Panel connect 1 battery of 150Ah. However, for 400W-500W Solar Panel connect 2 batteries of 150Ha/12V each in parallel connection.

Brainy Eco 1600/24V		
Mode	Battery (Ah)	Panel (W)
M1	45 - 75 Ah	160-240W
M2	100 - 135 Ah	300-500W
M3	150 - 180 Ah	600-700W
M3	150Ah x 2*	800-1000W

CAUTION: For 300W Solar Panel connect 1 battery of 150Ah. However, for 400W-500W Solar Panel connect 2 batteries of 150Ha/12V each in parallel connection.

FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	In-Built
Noiseless Operation	✓
Static By-Pass	✓
Automatic Temperature Compensation	✓
Low Voltage Disconnect	✓
Freedom to Choose Battery Size	✓
Crest Factor	5:1
6 S Battery Charging	✓
90V Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Pure DC Charging	✓
ATC	✓

Applications* Computer, Printer, Server, Refrigerator, Fan, Television, Hair dryer, Washing Machine, Lights, Air Cooler, Water Purifier, Rice Cooker, Juicer, Vacuum Cleaner, Game Console, Dishwasher.

Design Registration No.: 239399
Technology Patent: Patent Protected • Trademark No.: 1634249

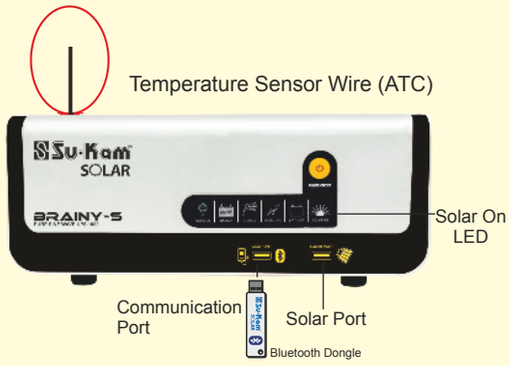
Available Models

Model	Dimension (LxWxH) in mm	Weight
Brainy ECO 1100/12V	302x311x128	11.109 Kg
Brainy ECO 1600/24V	407x304x172	16.305 Kg

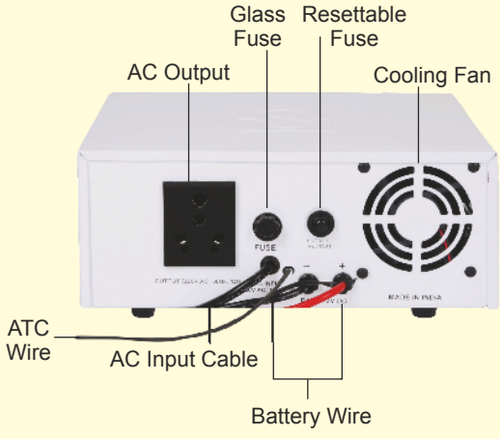
*Depending on Model Capacity

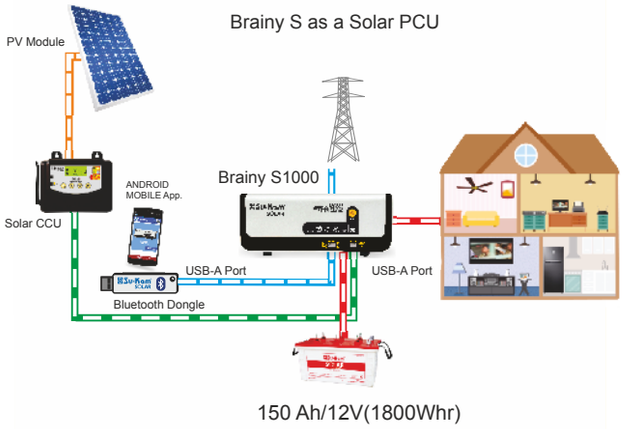
Brainy S Solar PCU (with external Charge Controller) - Standard Range

Brainy S Solar PCU with external Charge Controller 1000/12V



Back Panel



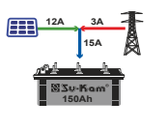


150 Ah/12V(1800Whr)

#Values displayed are for reference only.

Su-Kam presents the world's first zero changeover time Brainy S Solar UPS that is the perfect system to run all kinds of sensitive appliances through solar power and mains. When it is connected with Su-Kam's MPPT or PWM solar charge controller, it can be converted into a smart Solar Power Conditioning Unit with charge sharing feature. This brilliant product combines the features of UPS and Solar Power Conditioning Unit to give reliable and steady power to your computers, modems, servers and other sensitive appliances. It can operate on both solar power as well as power from grid. However, it always gives priority to solar power.

KEY FEATURES



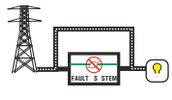
Works as a PCU with external Solar Charger - Brainy-S is a smart solar UPS, it can work as a Solar PCU with external Solar Charge Controller. It has a solar port which helps to create a good communication between solar controller and Brainy-S.

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

ZERO Switch Over Time

A UPS that helps set a UNIQUE BOOST VOLTAGE that ensures proper battery charging in all weather conditions with the help of a temperature sensor.

Automatic By-Pass System (ABS), in case of UPS failure the ABS present helps to by-pass electricity to mains so that un-interrupted power supply can be enjoyed.



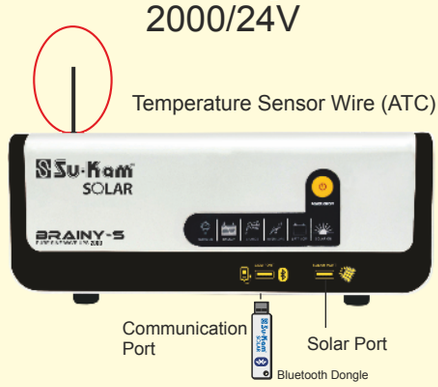
RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

FEATURES

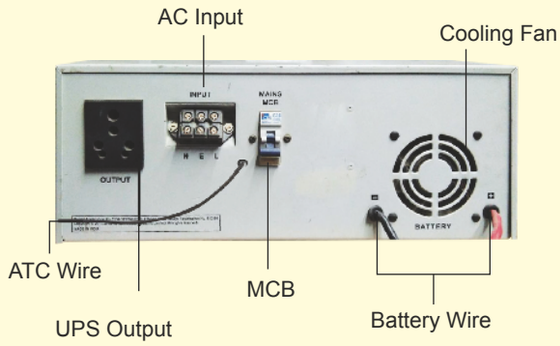
- 20KHz frequency design ensures noiseless operations.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Pure Sinewave UPS with inbuilt battery charger.
- 5th Generation Micro Processor that ensures complete noiseless operation and faster processing.
- Intelligent Charge sharing- helps to greatly reduce electricity bills as well as maintain battery life. For example, if your battery needs 15amps charging current to charge properly and solar is generating 12amps then it will take remaining 3amps from mains to charge your battery.
- Brainy S has been typically designed for optimum performance and maximum protection. Brainy S comes with unique protection features such as overload protection, short circuit protection, mains low cut, mains high cut, PV low cut, PV high cut, battery low protection that prevents battery from going into deep discharge etc.
- 6 Stage battery charging technology helps in increasing the battery life.

Brainy S Solar PCU (with external Charge Controller) - Standard Range

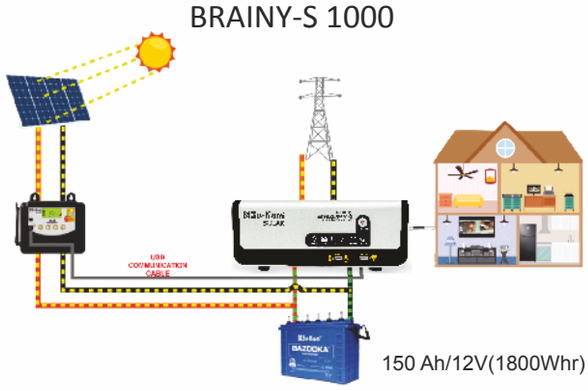
Brainy S Solar PCU with external Charge Controller 2000/24V



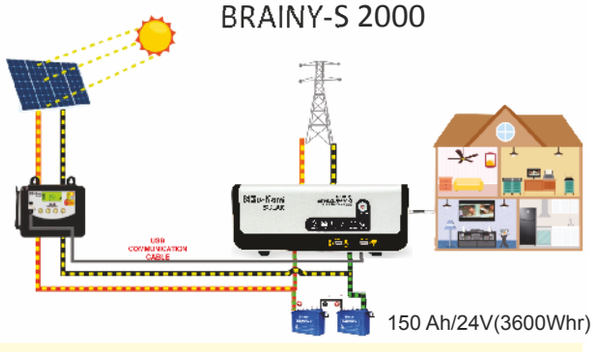
Back Panel



BRAINY-S 1000

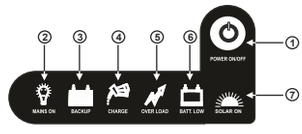


BRAINY-S 2000



- Smart communication with External Solar Charge Controller via USB port. With your Brainy S you can connect Su-Kam make solar charge controller that will efficiently charge your battery and prolong battery life.
- Zero Changeover Time From Mains Mode To Battery Mode- Perfect for running sensitive equipment like computers, printers, high inrush current Industrial Equipment.
- Standard Model 220V/50Hz (Models on order basis: 110V/60Hz and 220V/60Hz).
- Compatible with all kinds of generators especially rural make ones. When generators, especially rural make ones provide electricity their frequency may range between 42Hz to 65 Hz. In such a scenario UPS usually cut the supply and start running on backup mode. But we have fitted our UPS in such a way that they continue to provide hassle free backup.
- Automatic By-Pass System, in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.
- High Crest Factor 3:1 enables running of loads that require high starting current, ideal for big appliances that need high starting and low running current

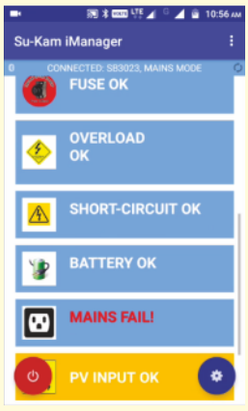
LED AND FAULT INDICATIONS

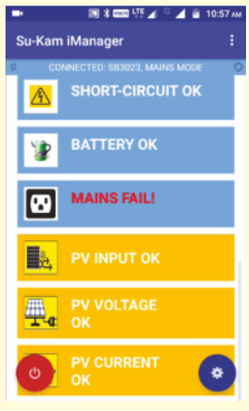


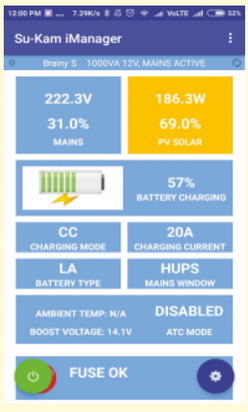
1. ON / OFF Switch: If ON switch is ON, it means UPS is in power ON mode. If switch is OFF, it means UPS is in power OFF mode.
2. MAINS ON: This LED display icon glows to show that the mains grid power is available.
3. BACKUP: This LED display icon glows when mains grid power is not available and the UPS is providing back up.
4. BATTERY CHARGING/CHARGED: This LED display icon glows in an on-and-off pattern during charging the batteries from main grid power.
   When battery is fully charged it glows continuously.
5. OVERLOAD: This LED display icon glows in red in an on-and-off pattern along with the buzzer beeping incase of overload condition. The UPS will try maximum 8 times before shutting down if the overload is not reduced. It can be reset by reducing the load and then switching OFF the power button on the front panel and switching it ON after 3 seconds.
6. SHORT CIRCUIT: This LED will glow continuously along with buzzer beep in case of a short circuit in the system output load. The UPS will try maximum 4 times before shutting down. After this the short circuit has to be removed and the UPS has to be reset by switching off the power button on the front panel and switching it on after 3 seconds.
7. BATTERY LOW: This LED display icon glows in red in an on-and-off pattern along with buzzer beep to indicate low level of battery charge or battery close to discharge. As the battery voltage reaches the selected cut-off limit, which is either 10.5V / 11V, the UPS will shut down and the LED icon will glow in red continuously. The UPS will resume working only after battery start charging again from mains.
8. SOLAR ON: If the Solar ON icon glows that means solar power is ON. If Solar Power is not available or solar panels are not connected in that case solar ON indicator will blink.

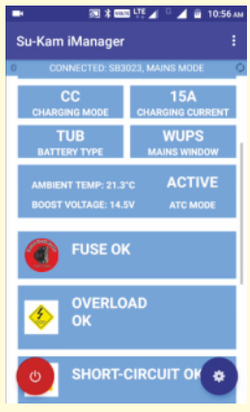
Brainy S Solar PCU (with external Charge Controller) - Standard Range

Brainy S Solar PCU with external Charge Controller









Brainy S Solar UPS has a COM Port which can be used for Mobile charging as well as Bluetooth device. It also has a Solar Port which is used to create communication between Brainy S & Solar Charge Controller.

Brainy S Solar UPS is Bluetooth Solar compatible which provides easy access and control to all the running parameters like System Status: Mains/Backup mode, Solar Generation, Charge Sharing, Backup Time, Battery Status, Grid Status, Faults Status & Recovery Solution. The product is great value for money.

Download App on Android & Apple Store

FEATURES	
Pure Sinw Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Static By-Pass	✓
Automatic Temperature Compensation	✓
Low Voltage Disconnect	✓
Freedom To Choose Battery Size	✓
Crest Factor	3:1
6 S Battery Charging	✓
90V Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Pure DC Charging	✓

Applications*

Computer, Printer, Server, Refrigerator, Fan, Tubelight, LED, Television, Washing Machine, Lights, Air Cooler, Water Purifier, IT Loads, Water Pump, Juicer, Game Console, Dishwasher, CNC Machines.

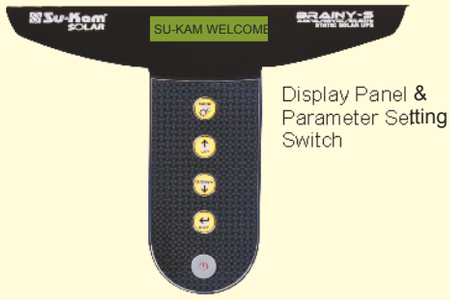
Available Models

Model	Dimension (LxWxH) in mm	Weight
BrainyS 1100/12V	302x293x132	10.64 Kg
BrainyS 2000/24V	407x304x172	15.545 Kg

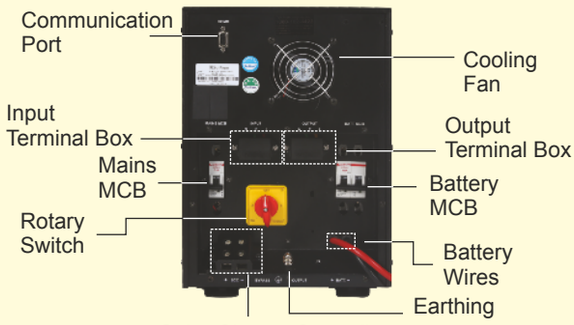
*Depending on Model Capacity

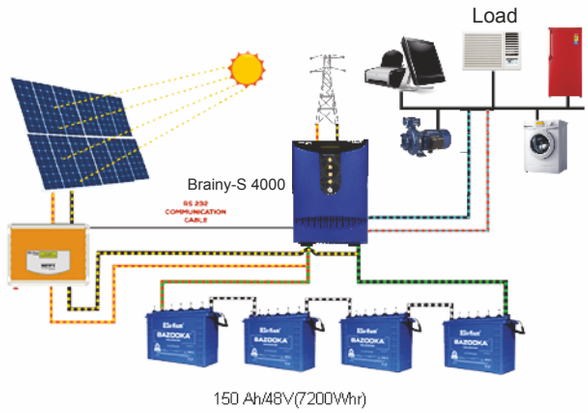
Brainy S Solar PCU (with external Charge Controller) - Standard Range

Brainy S Solar PCU (1P-1P) with external Charge Controller 4000/48V



Back Panel

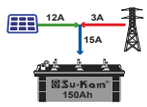




#Values displayed are for reference only.

Su-Kam presents the world's first zero change over time solar UPS that is the perfect system to run all kinds of sensitive appliances through solar power and mains. When it is connected with Su-Kam's MPPT or PWM Solar Charge Controller, it can be converted into a smart Solar Power Conditioning Unit with charge sharing feature. This brilliant product combines the features of UPS and Solar Power Conditioning Unit to give reliable and steady power to your computers, modems, servers and other sensitive appliances. It can operate on both solar power as well as power from grid, but it always gives priority to solar power.

KEY FEATURES



Works as a PCU even with external Solar Charger Brainy S can work as a solar power conditioning unit with external solar charge controller. It can operate on both solar power as well as power from grid but it always gives priority to solar power. It functions on the principle of smart charge sharing.

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

ZERO Switch Over Time

Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time. Ordinary UPS require at least a 150Ah battery to work even if you need less back-up time.

Solar & Grid Priority Selection, in Brainy-S you can select solar or grid priority in the system according to your area of use. If you are in an area having frequent power cuts you can select grid priority and use mains whenever available. If not you can select solar priority and Brainy-S will make sure that the usage of mains will be minimum.

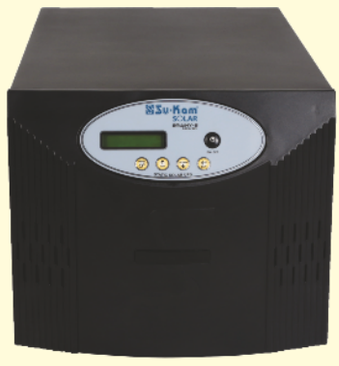
RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

FEATURES

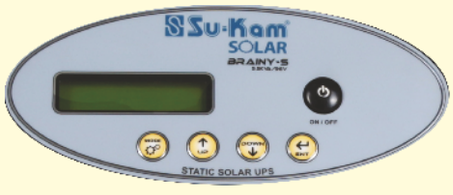
- 20KHz frequency design ensures noiseless operation.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Pure Sinewave UPS with inbuilt battery charger.
- 5th Generation Micro Processor that ensures complete noiseless operation and faster processing.
- Smart communication with External MPPT Solar Charge Controller via RS 232 Communication port– With your BrainyS you can connect Su-Kam Solar Charge Controller that will efficiently charge your battery and prolong battery life. You may also connect other make MPPT Solar Charge Controller with your BrainyS.

Brainy S Solar PCU (with external Charge Controller) - Standard Range

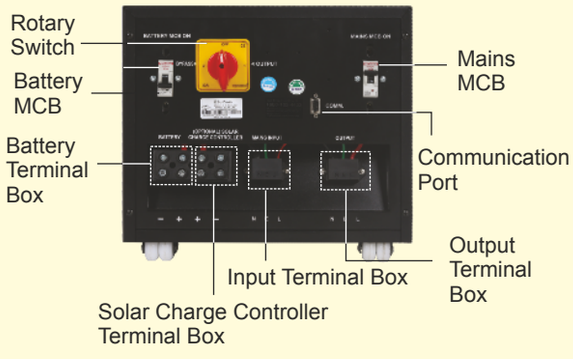
Brainy S Solar PCU (1P-1P) with external Charge Controller 5.5KVA/96V

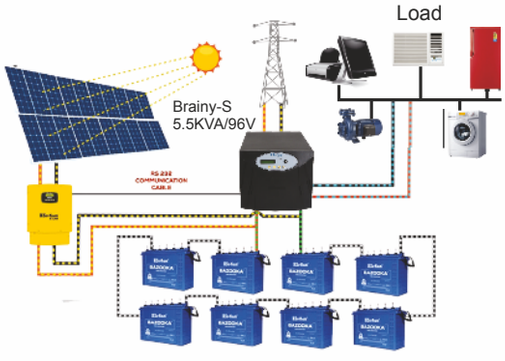


Display Panel & Parameter Setting Switch



Back Panel





150 Ah/96V(14400Whr)

#Values displayed are for reference only.

- Intelligent Charge Sharing - Helps to greatly reduce electricity bills as well as extend battery life. For example, if your battery needs 15amps charging current to charge properly and solar is generating 12amps then it will take remaining 3amps from mains to charge your battery.
- BrainyS has been typically designed for optimum performance and maximum protection. BrainyS comes with unique protection features such as overload protection, short circuit protection, mains low cut, mains high cut, PV low cut, PV high cut, battery low protection that prevents battery from going into deep discharge etc.
- 6 Stage battery charging technology helps in increasing battery life.
- Zero Changeover Time From Mains Mode To Battery Mode- perfect for running sensitive equipment like computers, printers, High inrush current Industrial Equipment.
- Standard Model 220V/50Hz (Models on order basis: 110V/60Hz and 220V/60Hz).
- Standard Model 4000/48V & 5.5KVA/96V .
- Compatible with all kinds of generators especially rural make ones. When generators, especially rural make ones, provide electricity their frequency may range between 42Hz to 65 Hz. In such a scenario a UPS usually cuts the supply and starts running on backup mode. But we have fitted our UPS in such a way that they continue to perform and provide hassle free backup.
- Automatic By-Pass System : in case of UPS failure the automatic by-pass system present helps to by-pass electricity to mains so that uninterrupted power supply can be enjoyed by the user.
- High Crest Factor 3:1 enables running of loads that require high starting current, ideal for big appliances that need high starting and low running current
- Compliance to international test standards.
- BrainyS comes with 4 parameter setting switches- MODE, UP, DOWN, ENTER.
  - MODE- Press once for system parameter settings. Press once again for system running parameters
  - Press UP to increase the value of settable system parameter
  - Press DOWN to decrease the value of settable system parameter
  - Press ENTER to scroll the setting parameters.

Description of Front Panel Switches for System Parameters Settings.

ESC — Press once for system parameter settings
Press once again for system running parameters.

UP — Press to increase the value of settable system parameters.

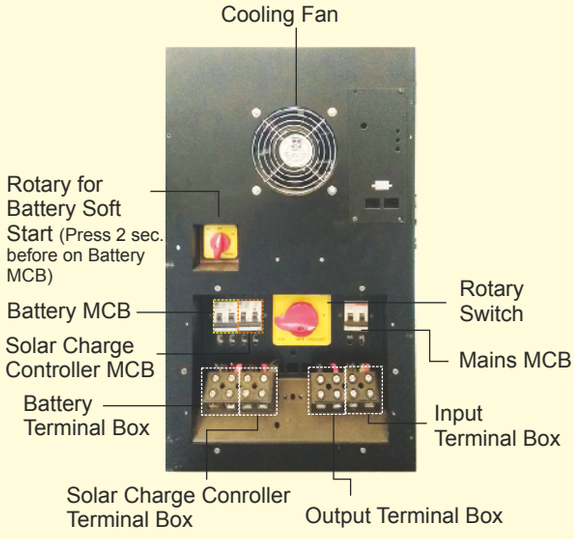
DOWN — Press to decrease the value of settable system parameter.

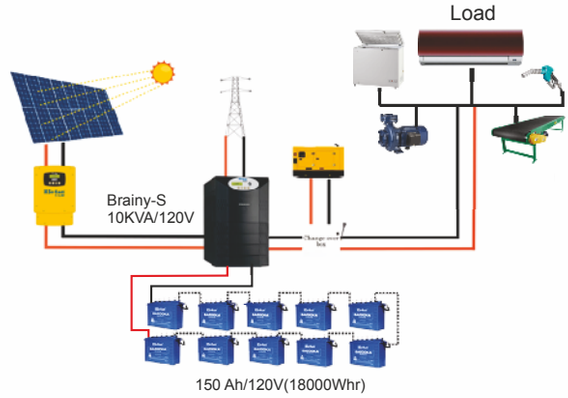
ENTER — Press to scroll the settable system parameters.

Brainy S Solar PCU (with external Charge Controller) - Standard Range

Brainy S Solar PCU (1P-1P) with external Charge Controller 10KVA/120V

Back Panel





#Values displayed are for reference only.

Display Parameters

PASSWORD : 1234	UP KEY : 50 Hz DOWN KEY : 60 Hz
Password Protective	Operating Frequency
CHG DC I : 20A	Mains LX : 150V
Variable Charging Current	Mains Low Cut
I/P SOURCE- Solar	BAT BOOST : 113V
Solar/Grid - Priority Setting	Battery Boost Voltage Setting

Alerts

BATTERY LOW ALERT	O/P SHORT CKT
Battery Low	Output Short Circuit
MAINS FAIL	PV NO CHARGE
Mains Fail	Solar OFF/Solar not Connected

FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Automatic Temperature Compensation	✗
Low Voltage Disconnect	✓
Freedom To Choose Battery Size	✓
Crest factor	3:1
6 S Battery Charging	✓
90V Charging	✗
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Pure DC Charging	✓

Applications* Computer, Printer, Server, Air Conditioner, Refrigerator, Fan, Television, Washing Machine, Lights, Air Cooler, Water Purifier, IT Loads, Water Pump, Juicer, Petrol pump, Game Console, Dishwasher, CNC Machines.

Available Models

Models	Dimension (LxWxH) in mm	Weight
4000/48V BrainyS (1P-1P)	395x245x355	20 Kg
5.5KVA/96V BrainyS (1P-1P)	700x455x420	53.5 Kg
10KVA/120V Brainy (1P-1P)	700x455x420	70 Kg

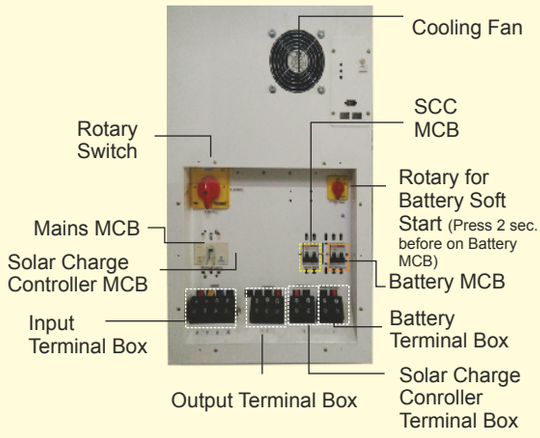
*Depending on Model Capacity

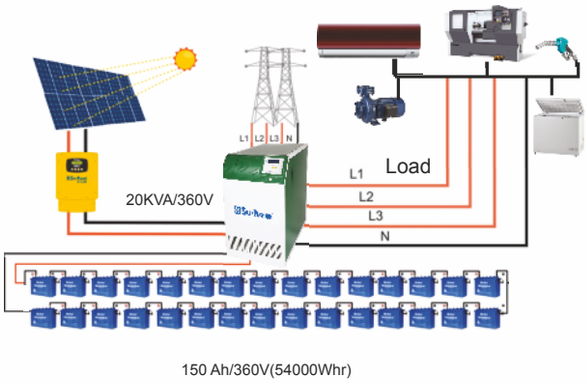
Brainy S Solar PCU (with external Charge Controller) - Standard Range

Brainy S (3P-3P)
10KVA/180V, 20KVA/360V,

Display Panel

Back Panel





150 Ah/360V(54000Whr)

#Values displayed are for reference only.

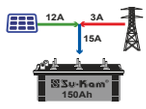
Su-Kam presents the world's first zero changeover time Solar UPS that is the perfect system to run all kinds of sensitive appliances through solar power and mains. When it is connected with Su-Kam's MPPT or PWM solar charge controller, it can be converted into a smart Solar Power Conditioning Unit with charge sharing feature. This brilliant product combines the features of UPS and Solar Power Conditioning Unit to give reliable and steady power to your computers, modems, servers and other sensitive appliances. It can operate on both solar power as well as power from grid, but it always gives priority to solar power. It is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

KEY FEATURES

Heavy Duty Usage - These are ideal for all types of commercial establishments like offices, showrooms, shopping malls, hospitals, hotels, schools, labs, petrol pumps, banks, telecom towers, ATMs and BPOs etc.

Work as a PCU even with external Solar Charger

Brainy S can work as a Solar Power Conditioning Unit with external Solar Charge Controller. It can operate on both solar power as well as power from grid, but it always gives priority to solar power. It functions on the principle of smart charge sharing



FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Automatic Temperature Compensation	✗
Low Voltage Disconnect	✓
Freedom To Choose Battery	✓
Crest Factor	3:1
6 S Battery Charging	✓
90V Charging	✗
Pure DC Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Applications* Computer, Printer, Server, Air Conditioner, Refrigerator, Fan, Television, Washing Machine, Lights, Air Cooler, Water Purifier, IT Loads, Water Pump, Juicer, Petrol pump, Game Console, Dishwasher, CNC Machines.

Available Models

Model	Dimension (LxWxH) in mm	Weight
10kVA/180V BrainyS (3P-3P)	450x740x735	110 Kg
20kVA/360V BrainyS (3P-3P)	450x740x735	135Kg

What is a Solar Online UPS?

A Solar Online UPS is designed and developed to provide continuous power supply to small and large scale enterprises. It is connected with an external MPPT Solar Charge Controller and together they work as a Solar Power Conditioning Unit. A solar online UPS is best suited for areas that require continuous and uninterrupted power supply.

Why do we need a Solar Online UPS?

The online UPS is connected to the main load at all times or until the battery in it gets charged. In this case, the electronic device gets power from the online UPS and not directly from the AC main supply. So an online UPS consumes more power from the utility which results in high electricity bill. Solar Online UPS always gives first priority to solar for load running which leads to reduce the electricity bill.

Application of Solar Online UPS

Computers : Workstations, Servers, Date Centers, Plotters, Monitors, Modems.

Telecommunication/Communications: Key Systems, EPABX systems, Fax Machines, Networking Products, Bridges, Voice Messaging systems.

Medical Equipment : Operation Theaters.

Printing & Media Equipment : Digital Color Labs, Scan Printing Systems, Xerox Machines etc.

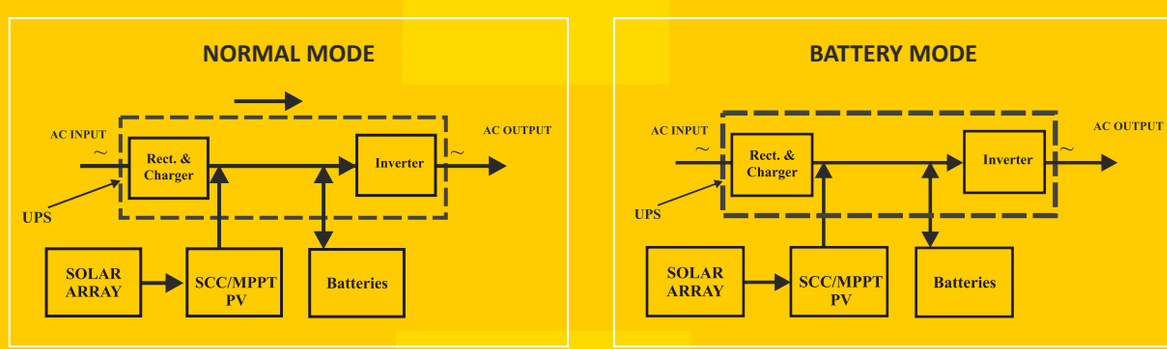
Point of Scale : Cash Registers, Inventory Control systems.

Miscellaneous : Video Equipment, Sound equipment, Sensitive Electronics and Computerized systems.

Advantages

A Solar Online UPS provides instant protection from power cuts and interruptions by converting solar energy into electric currents. It stores this current within the batteries and then supplies power to provide the ultimate protection for mission critical applications like data processing, telecommunications, industrial processes, security and electro-medical systems. It always gives first priority to solar power which helps reduce electricity bills.

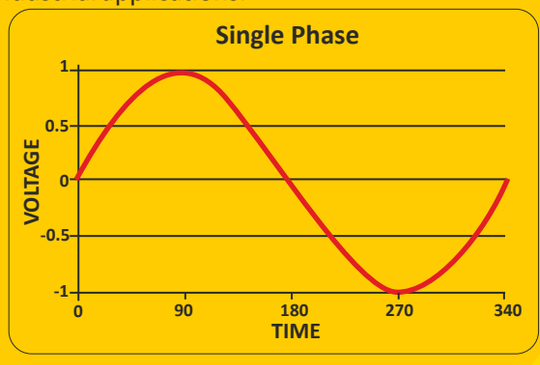
Block Diagram of Solar Online UPS



Types of Solar Online UPS

Single-phase

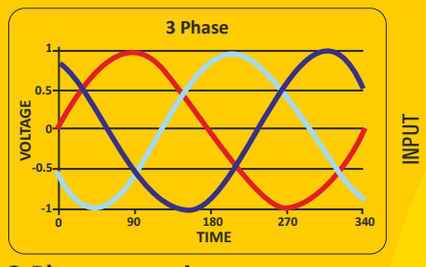
- Able to supply ample power for most customers with smaller needs, including homes and small, non-industrial businesses.
- Adequate for running motors up to about 5 horsepower; a single-phase motor draws significantly more current than the equivalent 3-phase motor, making 3-phase power a more efficient choice for industrial applications.

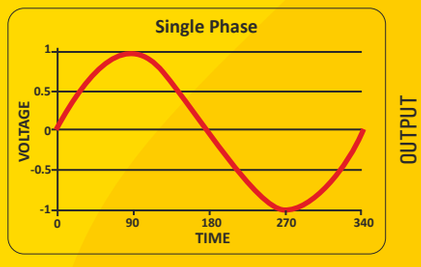


With the wave form of single-phase power, when the wave passes through zero, the power supplied at that moment is zero.

3 Phase in - 1 Phase out

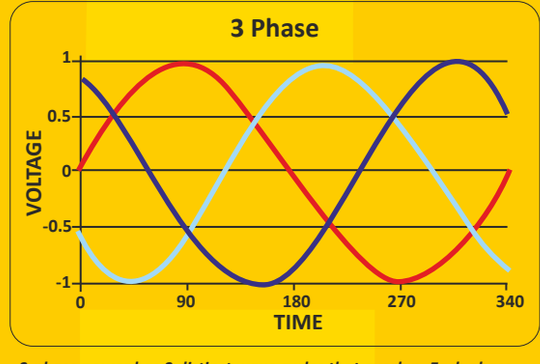
- 3P - 1P : The Su-Kam Solar Online UPS offers the unique benefit of 3 Phase Input - 1 Phase Output. If the grid supply is 3 Phase but your sensitive equipment is Single Phase, then this UPS is ideal as it converts the 3 Phase Input into Single Phase Output.
- Most Single Phase Output Online UPS come in low capacity. Su-Kam 3P - 1P Solar Online UPS is available in higher capacities too.





3-Phase power is:

- Common in large businesses, as well as manufacturing industries.
- Increasingly popular in power-hungry, high-density data centers.
- Expensive to convert from an existing single-phase installation, but 3-phase allows for smaller, less expensive wiring and lower voltages, making it safer and less expensive to run.
- Highly efficient for equipment designed to run on 3-phase.



3-phase power has 3 distinct wave cycles that overlap. Each phase reaches its peak 120 degrees apart from the others so the level of power supplied remains consistent

Solar Online UPS

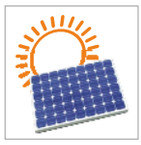
10 MUST HAVE FEATURES IN YOUR SOLAR ONLINE UPS

True Galvanic Isolation: Fundamental frequency transformer is used for low frequency isolation at the grid side. It provides safety to equipment against power surges & transients.

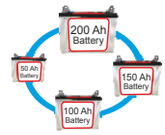
High Inrush Current: Solar Online UPS should be able to deliver high inrush current which is required for smooth running of heavy loads like Air Conditioners, Motors, industrial machines etc.

Solar Online UPS should **able to charge batteries of all types** – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

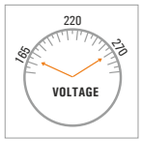
RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.



Solar Priority - Gives priority to solar over grid while charging batteries and running load. Leads to big savings on electricity bills.

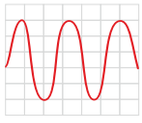


Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time.



Wide Input Mains Range: Solar Online UPS should have a wide operating range. It should be able to operate in conditions when the voltage is low (165v)or high(275v) .

Pure Sine Wave UPS which helps in smooth & quiet operation of electrical appliances because of less harmonic distortion.



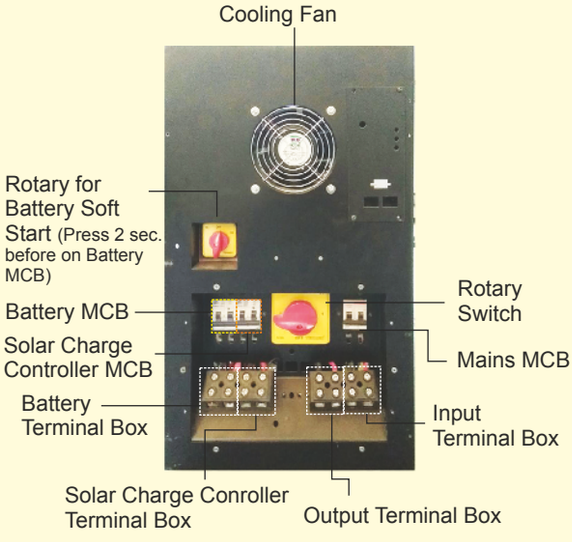
Should give **no break, constant & clean power** to loads to ensure their efficiency and longevity.

Zero Changeover Time: Solar Online should be designed to provide ultimate protection for mission critical applications like data processing, tele-communications, industrial processes, security and electro-medical systems.

Solar Online UPS: Intelli-S (1P-1P) - Premium Range

Intelli-S (1P - 1P)
5 KVA/180V, 10 KVA/180V

Back Panel



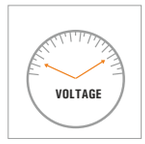
#Values displayed are for reference only.

Su-Kam's Intelli-S Solar Online UPS Series gives no-break, clean & constant power to loads. It is connected between the Mains or Utility Power and the load. Su-Kam's Solar Online UPS is an on-line double conversion UPS with a transformer isolated UPS. Intelli-S has a compact footprint and high quality output to provide the ultimate power protection for critical applications like data processing, telecommunications, industrial processes, security and electro medical systems and can analyze your power quality through power manager solution. The Intelli-S Solar Online UPS not only provides you power backup when you need it, but it also protects the load from disturbances or fluctuations. Because the UPS is already online, the switchover time from mains to UPS in case of a power cut is zero.

KEY FEATURES

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to equipment against power surges & transients.

Zero Changeover Time: Solar online has been designed to provide the ultimate protection for mission critical applications like data processing, tele-communications, industrial processes, security and electro-medical systems.



Wide Input Mains Range: Solar Online UPS has a wide operating range. It is able to operate in conditions when the voltage is low (165v) or high (275v) .

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

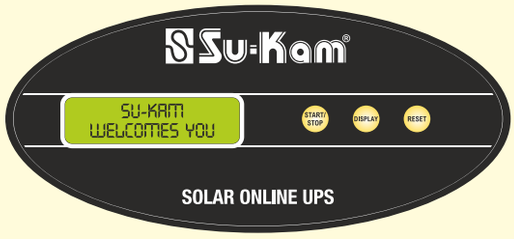
FEATURES

- Wide Input Voltage & Frequency Window.
- Built-in Galvanic Isolation Transformer.
- Auto-self Test on LCD Panel.
- Fuzzy Logic Controlled battery charging .
- Intelligent Battery Management.
- Cold Start.
- Battery Care System - Traditionally, when a mains supply is present the UPS charges its batteries. Battery power is used for the UPS should the input supply fail. Efficient battery management and care is therefore essential to the overall performance of the UPS in an emergency. The Intelli-S Battery Care System consists of a range of features designed to provide optimum performance and enhanced operating life.
- Charging current sharing of Grid and Solar: it shares Solar and Grid Power for load running and battery charging.

Solar Online UPS: Intelli-S (1P-1P) - Premium Range

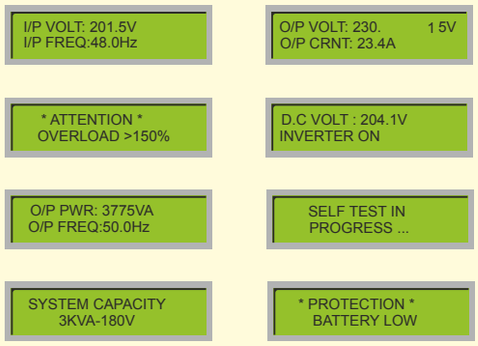
Intelli-S (1P - 1P)
5 KVA/180V, 10 KVA/180V

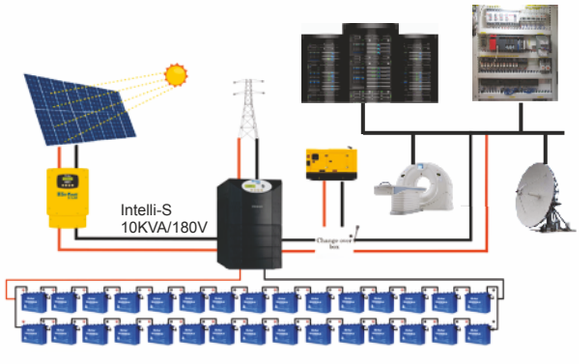
Front Panel



Parameter Setting Switch

LCD Display





180 Ah / 360V (27000 Whr)

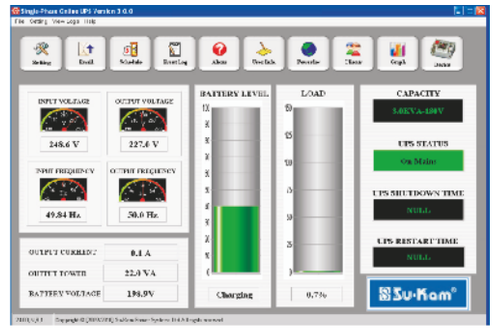
#Values displayed are for reference only.

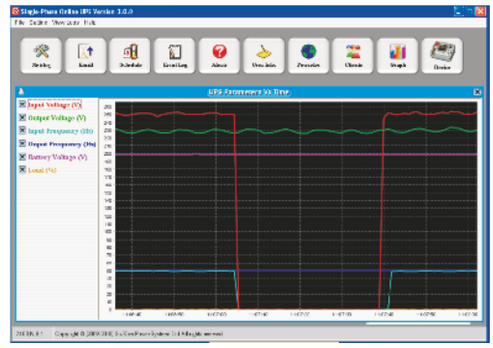
- High Inrush Current: Solar Online UPS delivers high inrush current which is required for smooth running of heavy loads like Air Conditioner, motor & industrial machines etc.
- User replaceable batteries that enable UPS to use batteries of any size depending on the required backup time.

Switches:

- Switches: Press Start/Stop switch for one beep for Solar Online UPS system ON/OFF.
- Display: To change LCD display parameters, press switch till one beep for hold parameter. Again press display switch till one beep to release the hold parameters.
- Reset: To reset Solar Online UPS system, press switch till one beep.

The client software also displays various real time Solar Online UPS parameters that it gets from the server. This communication works on TCP/IP protocol so that it can be used on most networks.
The client software also shows all the parameters output voltage, input voltage, output frequency, input frequency, battery charge, load, output and output VA on system in addition to the status of client and server communication.





Applications*

Computer, Printer, Server/Workstations, Networking Equipment, Telecom, Color Labs, ATM Machines/POS Systems, Gold Analyser Machines, Security Systems, Textile Industry.

Available Models

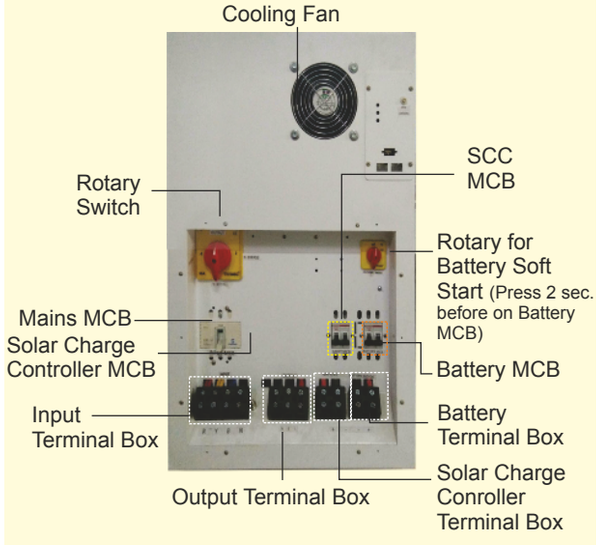
Model	Dimension (LxWxH) in mm	Weight
5KVA/180V	450x740x715	115 Kg
10KVA/180V	450x740x735	133 Kg

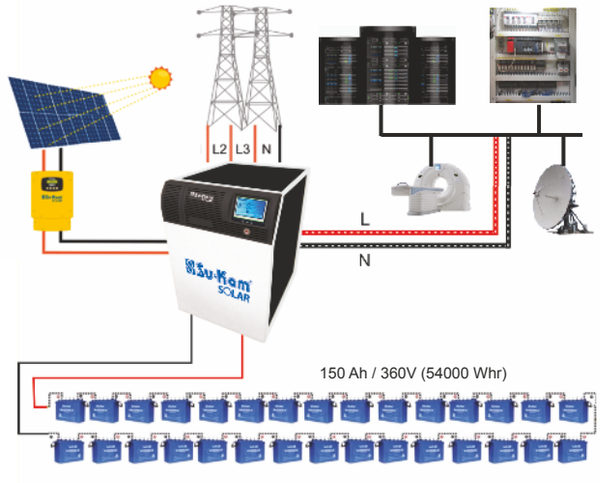
*Depending on Model Capacity

Solar Online UPS: Intelli-S (3P-1P) - Premium Range

Intelli-S (3P - 1P)
20 KVA/360V

Back Panel





Su-Kam's Intelli-S Solar Online UPS Series gives no-break, clean & constant power to loads. It is connected between the Mains or Utility Power and the load. Su-Kam's Solar Online UPS is an on-line double conversion UPS with a transformer isolated UPS. Intelli-S has a compact footprint and high quality output to provide the ultimate power protection for critical applications like data processing, telecommunications, industrial processes, security and electro medical systems and can analyze your power quality through power manager solution.

3P - 1P : The Su-Kam Solar Online UPS offers the unique benefit of 3 Phase Input - 1 Phase Output. If the grid supply is 3 Phase but your sensitive equipment is Single Phase, then this UPS is ideal as it converts the 3 Phase Input into Single Phase Output.

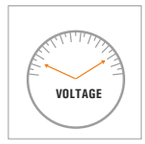
Most Single Phase Output Online UPS come in low capacity. Su-Kam 3P - 1P Solar Online UPS is available in higher capacities too.

KEY FEATURES

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to equipment against power surges & transients.

Zero Change Over Time: Solar online has been designed to provide the ultimate protection for mission critical applications like data processing, tele-communications, industrial processes, security and electro medical systems.

ZERO Switch Over Time



Wide Input Mains Range: Solar Online UPS has a wide operating range. It is able to operate in conditions when the voltage is low (165v) or high (275v) .

FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Automatic Temperature Compensation	✓
Low Voltage Disconnect	✗
Freedom To Choose Battery Size	✓
Crest Factor	3:1
6 S Battery Charging	✓
Pure DC Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Can Charge Batteries Of All Types/Sizes	✓

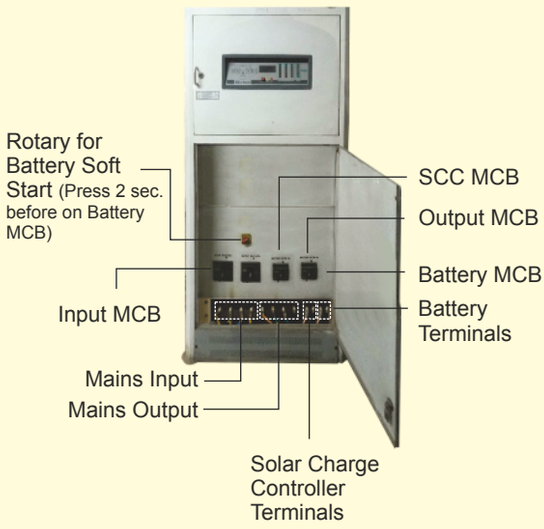
Available Models

Model	Dimension (LxWxH) in mm	Weight
20KVA/360V BrainyS	450x740x735	180 Kg

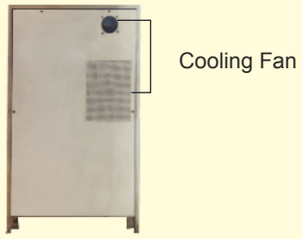
*Depending on Model Capacity

Solar Online UPS: Intelli-S (3P-3P) - Premium Range

Intelli-S (3P-3P)
30KVA/360V, 40KVA/360V
60KVA/360V



Back Panel

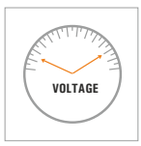


Su-Kam's Intelli-S Solar Online UPS Series gives no-break, clean & constant power to loads. It is connected between the Mains or Utility Power and the load. Su-Kam's Solar Online UPS is an on-line double conversion UPS with a transformer isolated UPS. Intelli-S has a compact footprint and high quality output to provide the ultimate power protection for critical applications like data processing, telecommunications, industrial processes, security and electro medical systems and can analyze your power quality through power manager solution. The Intelli-S Solar Online UPS not only provides you power backup when you need it, but it also protects the load from disturbances or fluctuations. Because the UPS is already online, the switch over time from mains to UPS in case of a power cut is zero.

KEY FEATURES

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to equipment against power surges & transients.

Zero Changeover Time: Solar online has been designed to provide the ultimate protection for mission critical applications like data processing, tele-communications, industrial processes, security and electro-medical systems.



Wide Input Mains Range: Solar Online UPS has a wide operating range. It is able to operate in conditions when the voltage is low (165v) or high (275v) .

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

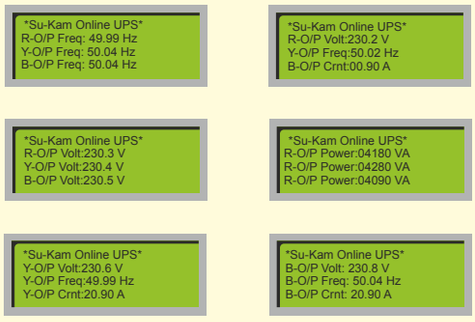
FEATURES

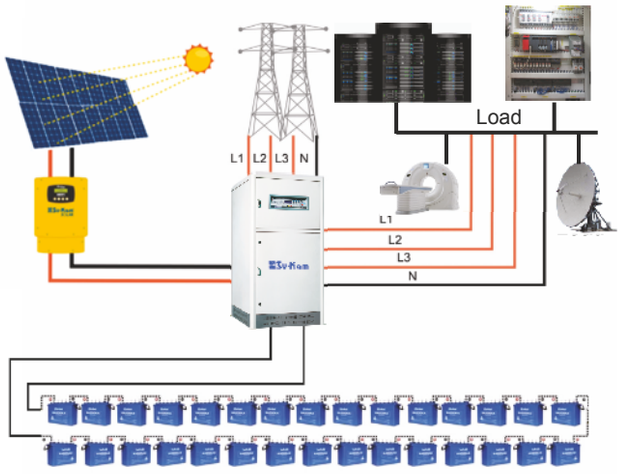
- Wide Input Voltage & Frequency Window.
- Built-in Galvanic Isolation Transformer.
- Auto-self Test on LCD Panel.
- Fuzzy Logic Controlled battery charging .
- Intelligent Battery Management.
- Cold Start.
- Battery Care System - Traditionally, when a mains supply is present the UPS charges its batteries. Battery power is used for the UPS should the input supply fail. Efficient battery management and care is therefore essential to the overall performance of the UPS in an emergency. The Intelli-S Battery Care System consists of a range of features designed to provide optimum performance and enhanced operating life.
- Charging current sharing of Grid and Solar: it shares Solar and Grid Power for load running and battery charging.
- High Inrush Current: Solar Online UPS delivers high inrush current which is required for smooth running of heavy loads like Air Conditioner, motor & industrial machines etc.

Solar Online UPS: Intelli-S (3P-3P) - Premium Range

Intelli-S (3P-3P)
30KVA/360V, 40KVA/360V
60KVA/360V

LCD Display





150 Ah / 360V (54000 Whr)

#Values displayed are for reference only.

The Su-Kam On-Line UPS Systems have an RS-232 Interface for power management. 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.

FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing	✓
Type of Solar Charge Controller	External
Noiseless Operation	✓
Automatic Temperature Compensation	✓
Low Voltage Disconnect	✗
Freedom To Choose Battery Size	✓
Crest Factor	3:1
6 S Battery Charging	✓
Pure DC Charging	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Can Charge Batteries Of All Types/Sizes	✓

Available Models

Model	Dimension (LxWxH) in mm	Weight
30KVA/360V – Intelli-S	600x780x1000	285 Kg
40KVA/360V – Intelli-S	600x780x1000	330 Kg
60KVA/360V – Intelli-S	755x835x1460	448 Kg

*Depending on Model Capacity

What is Solar On Grid/Grid Tie/ Grid Connected system?

A grid-tied electrical system, also called tied to grid or grid tie system, is a semi-autonomous electrical generation or grid energy storage system which links to the mains to feed excess capacity back to the local mains electrical grid. When insufficient electricity is available, electricity drawn from the mains grid can make up the shortfall. Conversely when excess electricity is available, it is sent to the mains grid.

Why do we need Solar On-Grid System?

PV on-grid rooftop solar power system is one of the most popularly used solar solutions for houses and commercial establishments. Grid-tie solar, also knows as on-grid, works in connection with the main grid. It offers the advantage of running load directly through solar and selling excess solar power back to electricity company by feeding the grid.

Advantages

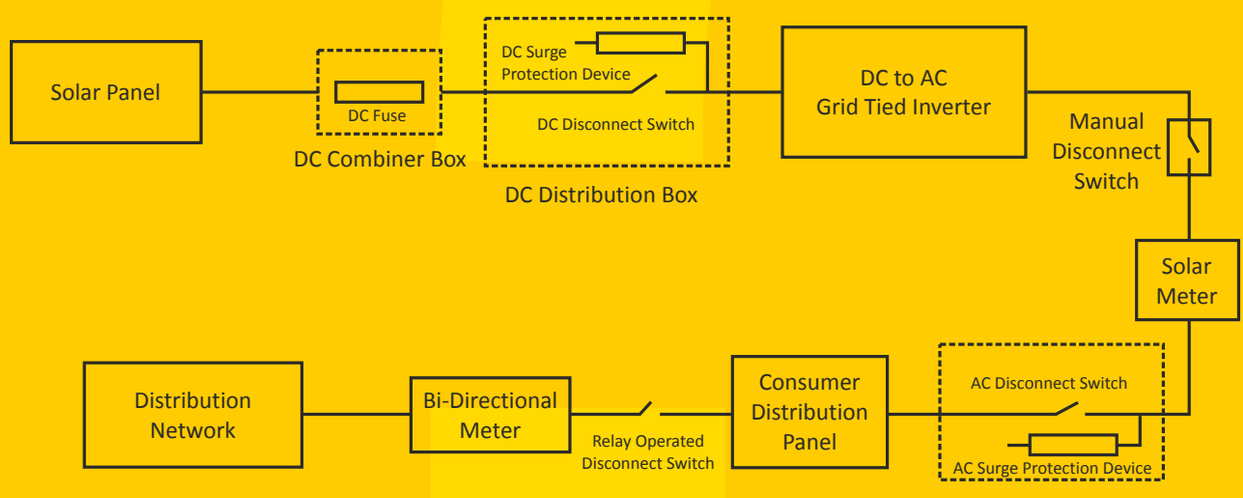
- Save more money with net metering; consumers can put this excess electricity onto the utility grid instead of storing it themselves with batteries. Consumer can make ROI in just 3-4 years.
- Batteries and other stand-alone equipment are required for a fully functional off-grid solar system and add to costs as well as maintenance. Grid-tied solar systems are therefore generally cheaper and simpler to install.

Components

A grid-tied solar system consists of the following components:

1. Solar Panels
2. DC-AC grid-tied solar inverter
3. Solar cables
4. Mounts

Block Diagram of Solar On Grid/Grid Tie/ Grid Connected system

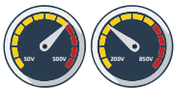


Solar On Grid/Grid Tie/Grid Connected system

10 MUST HAVE FEATURES IN YOUR SOLAR ON GRID/GRID TIE/GRID CONNECTED SYSTEM

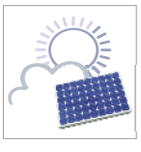
Your ideal Solar Grid Tie Inverter should have 97% efficiency through latest MPPT Technology. Maximum Power Point Tracking makes the solar power system so efficient that it is able to make nearly 30% extra solar power.

The remote monitoring and controlling connectivity of your device should be backed by a strong App. The app should be comprehensive and have an easy to navigate interface.



Extra Broad Operating Range: Grid-connected Solar Systems should be designed to work on a wide range. They should function even when PV voltage/Grid Voltage/frequency are low or high.

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to power surges & transients.



It should have Extra Broad Operating Range. It means that the system is able to generate solar power even during periods of low sunshine.

It should be Weather Resistant and continue to work during weather extremes such as dust, heavy rains, excessive heat or extreme cold.

Should have Ease of Installation and Minimum Maintenance.

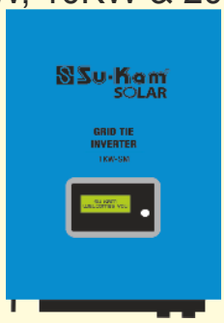
It should have LCD Screen to easily find out what's going on inside your solar inverter through messages on LCD screen. You can check for units of electricity being made, input and output

If you wish to cover two separate areas of rooftop with solar panels, you do not need to install another grid-tie inverter if your GTI has dual MPPT technology. You can install solar panels on both east & south sides and the dual MPPT technology will harness solar power on both the sides.

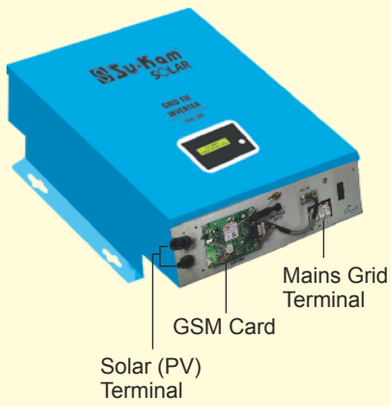
RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

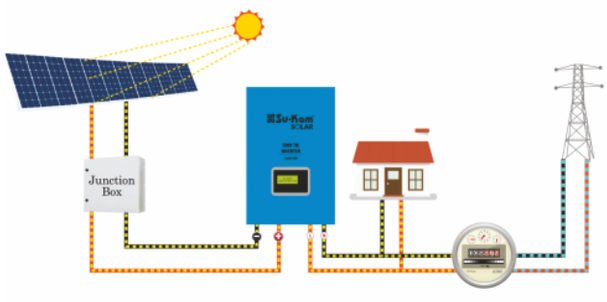
Grid Tie Inverter

Grid Tie Inverter
1KW, 1.5KW, 2KW, 3KW, 5KW, 10KW & 20KW



Bottom Panel





#Values displayed are for reference only.

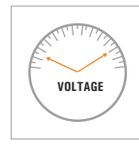
A grid tie inverter is connected to the mains supply of your home which is why it is also called the ON-Grid system. Take advantage of net metering policy in your state by selling solar electricity to Government through grid-tie solar installation at your home or office. Su-Kam's Grid-Tie Solar UPS is designed to generate maximum solar power with efficiency of 98% and work in even most extreme weather conditions.

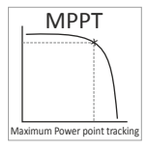
KEY FEATURES

Extra Broad Operating Range: Su-Kam's grid-connected solar systems are designed to work on a wide range. They can function even when PV Voltage is as low as 90V. It means that they are able to generate solar power even during periods of low sunshine.

In-built GSM for Remote Monitoring through which you can access all information related to the functioning of your solar power system such as DC input voltage, output voltage and current, units of electricity being made etc. You can access this online no matter which part of the country you are in.

Wide Mains Voltage/Frequency Range: Grid Tie Inverter has a wide operating range. It is able to operate in conditions of low & high voltage (185V to 265V) and talking about frequency, the operating frequency range is 44Hz to 55Hz.





Su-Kam's Grid-Tie Inverters run on highly Advanced MPPT Technology. Maximum Power Point Tracking makes the solar power system so efficient that it able to make nearly 30% extra solar power.

FEATURES

- 50KHz frequency design ensures noiseless operations.
- Easy to Install: It is a transformer-less compact unit that can be easily mounted. It also has plug and play AC and DC connectors which makes installation easy.
- Minimum Maintenance: The ability to function in even extreme weather conditions and absence of moving parts (such as fans) means that it is maintenance-free – plug and forget!
- LCD Screen to Monitor Performance: The screen on inverter helps you see the performance of inverter such as DC input voltage, output voltage and current, units of electricity being made etc. It also sounds an alarm in case of any problem.
- Hi-Frequency & Transformer-less Design: Due to being transformer-less, PV grid tie inverters have high frequency which leads to high efficiency of 97%. It also makes them light-weight and easy to install.

Grid Tie Inverter

Grid Tie Inverter
1KW, 1.5KW, 2KW, 3KW, 5KW, 10KW & 20KW

GET IT ON Google Play

LCD Display Parameters

SU-KAM WELCOMES YOU	PV WATT : 1010 CUM KWH : 24
MODEL XX.KW GTI	PV VOLTAGE : 120 PV CURRENT : 8.35A
PV WATT 778.5W CUM KWH : 11.6	GRID VOLT : 227 GRID CUR : 4.5A

#Values displayed are for reference only.

- Shade Tolerant MPPT Algorithm: Due to features such as Dual MPP tracking and wide operating voltage, our PV grid-tie inverters continue to work even during periods of partial shading due to clouds or dust. However, no solar panels or MPPT are tolerant to complete shading so Su-Kam's team will install the panels in such a way that they get maximum sun.
- Compliance to international test standards.
- Compatible with all kinds of generators especially rural make ones. When generators, especially rural make ones provide electricity their frequency may range between 42 to 65 Hz. In such a scenario normal Grid Tie usually cut the supply but we have designed our Grid Tie in such a way that they continue to perform provide hassle free solar power.
- Armed with protection features – Anti - Islanding, DC reverse polarity protection, ground fault monitoring, AC short circuit protection, all pole fault current monitoring unit, Environment protection -IP65.

Su-Kam has developed a GSM-based application for real-time management of Grid Tie System. Grid-tie inverters can be connected to Su-Kam's GSM monitoring Application through which you can access all information related to the functioning of your solar power system such as PV input voltage, output voltage and current, units of electricity being made etc. You can access this online no matter which part of the country you are in.

Su-Kam Grid Tie have LCD Screen to easily find out what is going on inside your solar inverter through messages on LCD screen. You can check for units of electricity being made, input and output voltage, current etc.

FEATURES	
MPPT Algorithm	✓
IP65 Rasting	✓
GSM Based Monitoring	✓
Noiseless Operation	✓
Genset Compatible	✓
Galvanic Isolation	✗
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Available Range:
SM-1W / SM-1.5W / SM-2KW / SM-3KW
DM-5KW / DM-10KW / TM-20KW

Available Models

Model	Dimension (LxWxH) in mm	Weight	G.Weight
1KW (1 SM)	630x400x245	13 Kg	15 Kg
1.5KW (1.5 SM)	410x640x250	13 Kg	14.2 Kg
2KW-SM (2 SM)	410x640x255	13 Kg	15 Kg
3KW-SM (3 SM)	410X640X255	16 Kg	18.2 Kg
5KW-DM (5 DM)	470X700X260	24 Kg	25.8 Kg
10KW-DM (10 DM)	800X645X340	40 Kg	44.5 Kg
20KW-TM (20 TM)	800X616X370	39 Kg	46.2 Kg

*Depending on Model Capacity

What is Grid Tie Inverter with Isolation Transformer?

GTI TRX 1000 is a grid tie inverter with isolation transformer and works till grid & PV are available within range. Since it has a transformer between the grid and the inverter, it provides safety to human beings against high voltages and also increases the reliability of the product against any variation in the grid.

What is True Galvanic Isolation?

True Galvanic Isolation in power equipment refers to the fact that the output power circuit is electrically and physically isolated from the input power circuit.

Why True Galvanic Isolation is important in Grid Tie Inverter?

This is the requirement of international safety agencies in order to prevent shock hazard. It is used to allow the output of a device to avoid potential ground loops and increase the safety of a device so that a person touching the live portion of the circuit will not have current flowing through them to the earth.

Why do we need Grid Tie Inverter with Isolation Transformer?

It increases reliability & ruggedness of the product by introducing the galvanic isolated transformer.

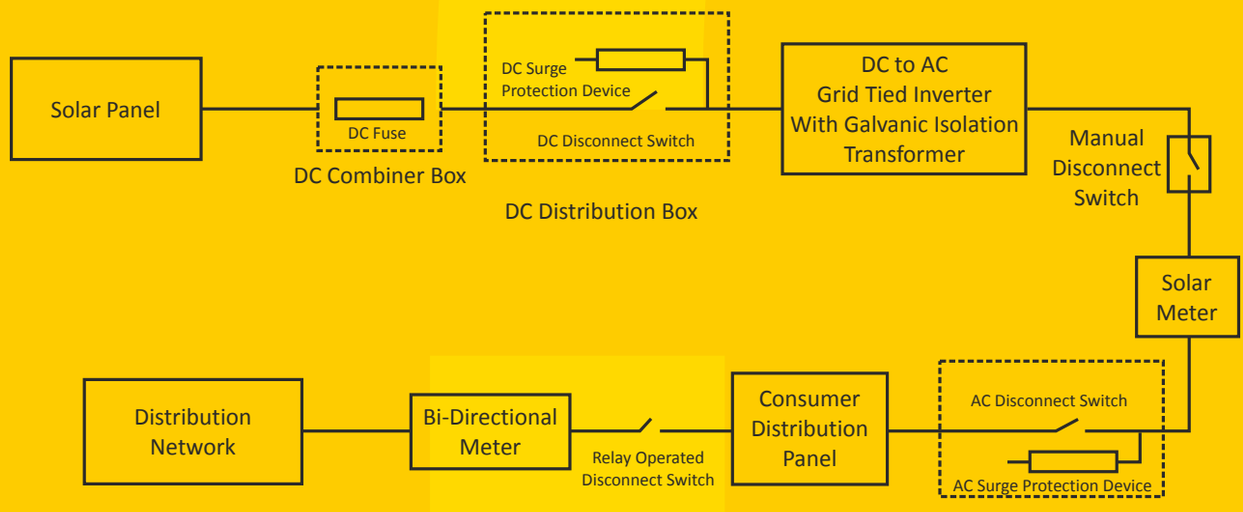
Advantages

a. MPPT tracking efficiency of >99% **b.** Built-in Galvanic Isolation Transformer for Grid Feed **c.** Monitoring through GSM app and RS232 **d.** PV Voltage working range is 28V to 42V for 1KW **e.** Low Voltage Solar system which leads to human safety at ultra-low cost **f.** LED display panel for easy monitoring

Applications

GTI TRX 1000 Grid Tie Inverter is widely used in applications such as homes, small scale industries and charging batteries.

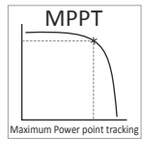
Block Diagram of Grid Tie Inverter with Isolation Transformer



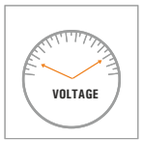
Grid Tie Inverter with Isolation Transformer

6 MUST HAVE FEATURES IN YOUR GRID TIE INVERTER WITH ISOLATION TRANSFORMER

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety against power surges & transients.



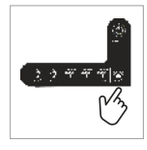
MPPT Charge Controller tracks the maximum power generated by solar panels and transfers the same to the system with minimal internal losses.



Wide Solar (PV) Range: GTI TRX 1000 Grid Tie Inverter should have a wide operating range. It is able to operate in conditions when the PV voltage is low (28v) or high (42v) .

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

Low Voltage Solar System : GTI TRX 1000 Grid Tie Inverter should ensure safety to humans from electrocution, that too at ultra – low cost.

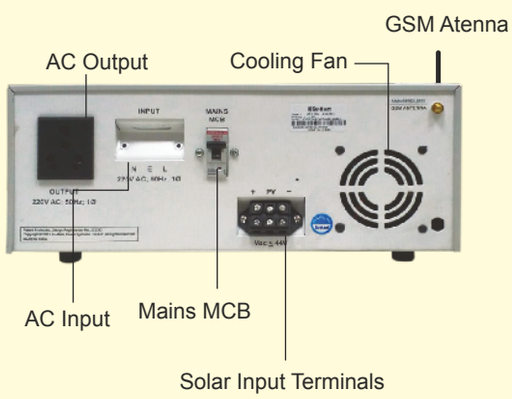


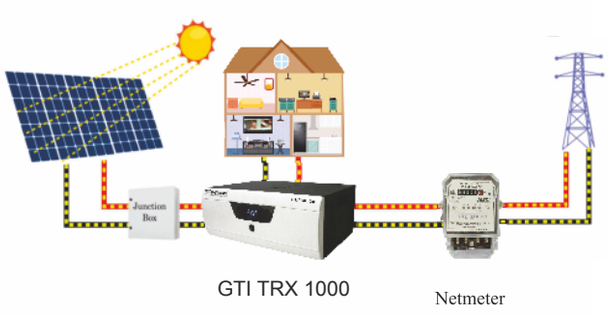
GTI TRX 1000 Grid Tie Inverter should have LED Display to easily find out what is going on inside your solar inverter through messages on black screen. You can check for units of electricity being made, input and output voltage etc.

GTI TRX 1000 Grid Tie Inverter - Premium Range

GTI TRX 1000 Grid Tie Inverter

Back Panel





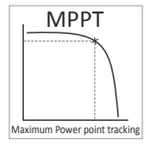
#Values displayed are for reference only.

Su-Kam's GTI TRX 1000 is a Grid Tie Inverter which utilizes maximum power of solar by feeding the power to the grid when mains is available which leads you to earn money by selling electricity to government. It uses a galvanic isolation at its output which makes it a rugged product along with increasing its reliability to grid fluctuations.

KEY FEATURES

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to power surges & transients.

Su-Kam's GTI TRX 1000 Grid Tie Inverters run on highly Advanced MPPT Technology. Maximum Power Point Tracking makes the solar power system so efficient that it is able to make nearly 30% extra solar power.



RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

Low Voltage Solar System : This ensures safety to humans from electrocution, that too at ultra – low cost.

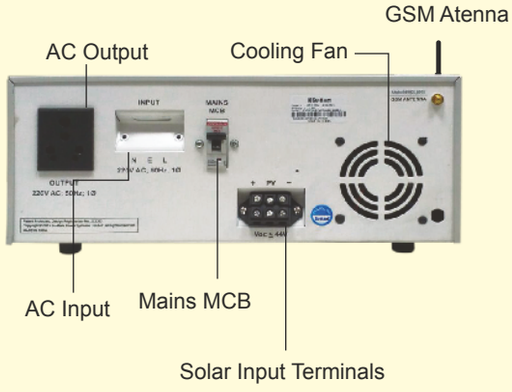
FEATURES

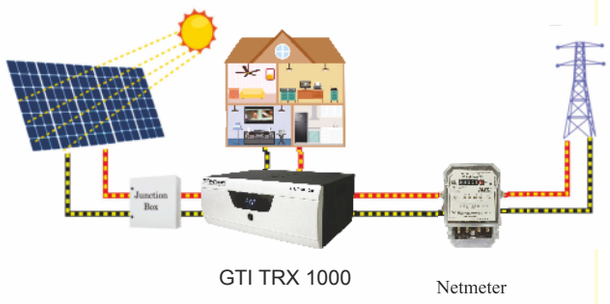
- MPPT tracking efficiency of >99%: Su-Kam's GTI TRX 1000 Grid Tie Inverters run on highly Advanced MPPT Technology. Maximum Power Point Tracking makes the solar power system so efficient that it is able to make nearly 30% extra solar power.
- Built-in Galvanic Isolation Transformer for Grid Feed: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety from power surges & transients.
- Monitoring through GSM App and RS232: Enables you to view the real time system parameters through a Mobile App (GSM) and RS 232. Also gives notification in case of fault on mobile app.
- PV Voltage working range is 28V to 42V for 1KW.
- Low Voltage Solar System: This ensures safety to humans from electrocution, that too at ultra – low cost.
- LED display panel for easy monitoring: GTI TRX 1000 Grid Tie Inverter has LED Display to easily find out what is going on inside your solar inverter through messages on black screen. You can check for units of electricity being made, input and output voltage etc.

GTI TRX 1000 Grid Tie Inverter - Premium Range

GTI TRX 1000
Grid Tie Inverter

Back Panel





#Values displayed are for reference only.

Display Parameters

Basically grid-connected system is comprised of 4 portions: PV array, PV inverter, AC connection unit and public grid connection unit. Once PV arrays receive sun shine, they will generate DC current and feed into PV inverter which is configured between DC input and municipal AC grid. Through converting DC into AC, the solar energy is transmitted into municipal electrical grid.

Solar Photovoltaic Array

Panel Range-GTI TRX 1000-4 panels in Parallel of 250Wp, 3 panels in parallel of 330Wp.

GSM Communication

The product has the capability to communicate through GSM, by sending SMS from the user mobile to the registered mobile number of the product as mentioned on the product cabinet.

The data received at the user mobile is in the form as shown below:

P/0/100/1000/28.1/25.0//27.2/10/220/50/10/240/1.75/50/32 2.2/0/0.1/409.7/0.9/0/0710171 0340 by this app, consumer can check system parameters like:

System Power Rating, PV Input Current, Output AC Frequency, Grid Voltage, Grid Frequency, PV Input Voltage, Output AC Voltage, Grid Current etc.

FEATURES	
Pure Sine Wave	✓
Built-in Galvanic Isolation Transformer	✓
MPPT Based Solar Charge Controller	✓
Noiseless Operation	✓
Grid Feeding With Isolation Transformer	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Available Models

Model	Dimension (LxWxH) in mm	Weight
GTI TRX 1000	407x304x172	16 Kg

*Depending on Model Capacity

What is Hybrid Grid Tie Inverter?

Hybrid Grid Tie Inverter is an inverter which works with and without grid supply. It also has battery to store the charge and use it when grid is not available. Thus it works as a grid tie inverter when grid is available and charge the battery at the same time. However in absence of grid it will work as an off-grid system.

What is True Galvanic Isolation?

True Galvanic Isolation in power equipment refers to the fact that the output power circuit is electrically and physically isolated from the input power circuit.

Why True Galvanic Isolation is important in Grid Tie Inverter?

This is the requirement of international safety agencies in order to prevent shock hazard. It is used to allow the output of a device to avoid potential ground loops and increase the safety of a device so that a person touching the live portion of the circuit will not have current flowing through them to the earth.

Why do we need Hybrid GTI?

Hybrid inverter utilizes the solar energy produced when grid is available or unavailable, hence it works in both condition. Thus it utilizes the solar energy in best way.

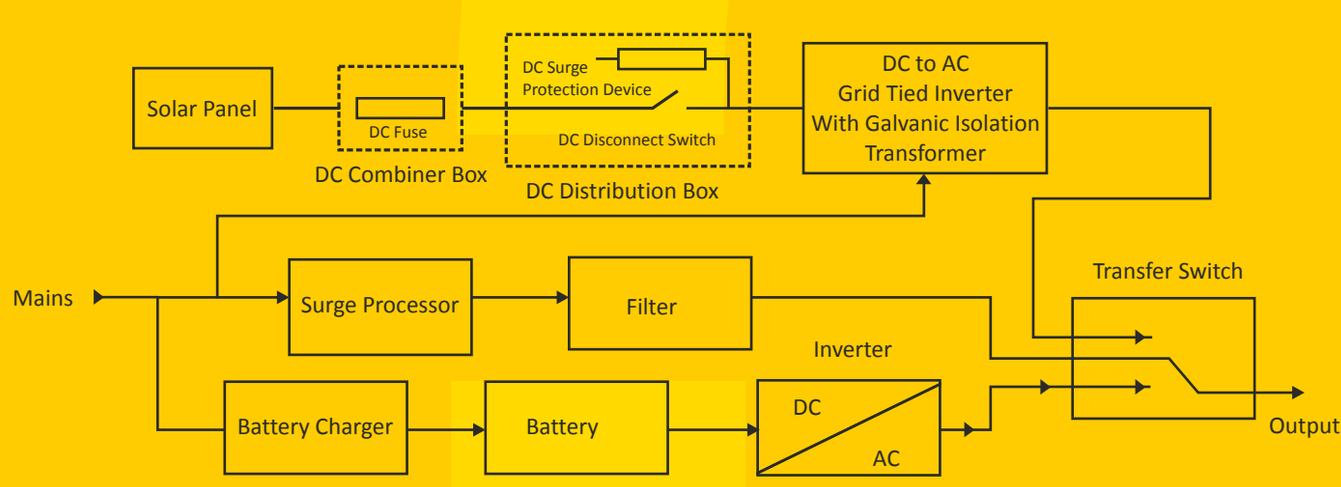
Advantages

a. Worked as both off-grid and on-grid.
b. Built-in Galvanic Isolation Transformer for charging and Grid Feed.
c. Pure Sine Wave UPS with zero changeover time.
d. Monitoring through GSM app and RS232.
e. PV Voltage working range is 28V to 42V for 1kW
f. Low voltage solar system which leads to human safety with ultra low cost.
g. LED display panel for easy monitoring.

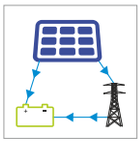
Applications

Hybrid Grid Tie Inverter is widely used in applications such as homes, small scale industries and charging batteries.

Block Diagram of Hybrid Grid Tie Inverter

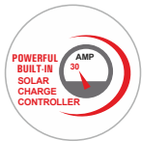


7 MUST HAVE FEATURES IN YOUR HYBRID GRID TIE INVERTER

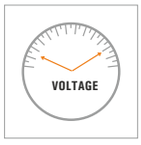


Hybrid -GTI should have the intelligent combination of a normal inverter and Grid Tie Inverter which can works as both off-grid and on-grid system. This is the only system which can utilize the maximum power of solar by feeding extra power to the grid when mains is available. When mains is not available solar power can be utilized to run load and charge battery at the same time.

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety against power surges & transients.



Powerful Built-in Solar Charge Controller - It should have the strength to run electrical appliances and charge the battery at the same time.



Wide Solar (PV) Range: Hybrid Grid Tie Inverter has a wide operating range. It is able to operate in conditions when the PV voltage is low (28v) or high (42v) .

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

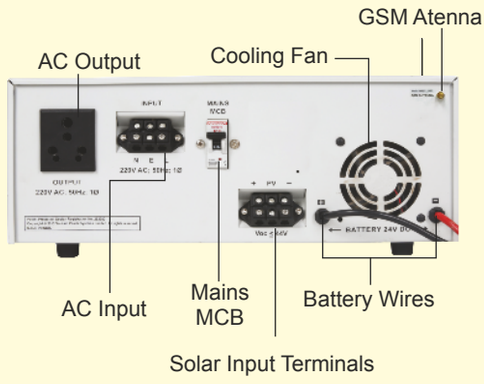
Low Voltage Solar System : Hybrid Grid Tie Inverter ensures safety to humans from electrocution, that too at ultra – low cost.

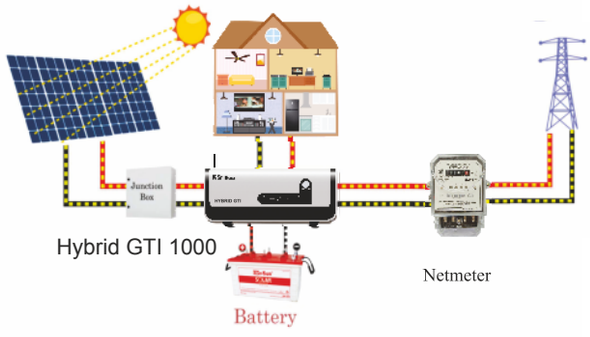
Hybrid Grid Tie Inverter should have LED Display to easily find out what is going on inside your solar inverter through messages on black screen. You can check for units of electricity being made, input and output voltage etc.

Hybrid Grid Tie Inverter - Premium Range

Hybrid GTI 1000

Back Panel



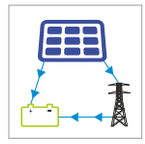


150 Ah/12V(1800Whr)

#Values displayed are for reference only.

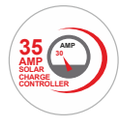
Su-Kam's Brainy Hybrid GTI is an intelligent combination of a normal inverter and GTI which works as both off –grid and on – grid inverter. This is the only inverter which can utilize the maximum power of solar by feeding extra power to the grid when mains is available which leads you to earn money by selling electricity to government. When mains is not available solar power can be utilized to run the load and charging battery at the same time.

KEY FEATURES



Hybrid -GTI has an Intelligent Combination of a normal inverter and Grid Tie Inverter which works as both off-grid and on-grid system.

True Galvanic Isolation: Fundamental Frequency transformer is used for low frequency isolation at the grid side. It provides safety to power surges & transients.



Powerful Built-in 35 Amp solar Charge Controller - It has the strength to run electrical appliances and charge the battery at the same time.

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

FEATURES

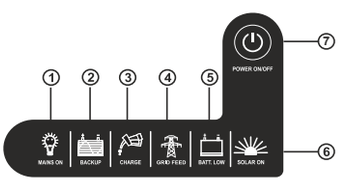
- Hybrid -GTI has the Intelligent combination of a normal inverter and Grid Tie Inverter which can **works as both off-grid and on-grid system**.
- True Galvanic Isolation: is used for low frequency isolation at the grid side. It provides safety to power surges & transients.
- High frequency based design ensures noiseless operation of UPS.
- Pure Sine Wave Output and Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like computers, printers, high inrush current industrial equipment.
- Mobile App Monitoring & Control: Enables us to view the real time system parameters through a Mobile App (GSM) and RS 232. Also gives notification in case of fault on Mobile App.
- Low voltage Solar system which leads to human safety with ultra low cost.
- Hybrid Grid Tie Inverter have **LED Display** to easily find out what is going on inside your solar inverter through messages on black screen. You can check for units of electricity being made, input and output voltage etc.

Hybrid Grid Tie Inverter - Premium Range

Hybrid GTI 1000

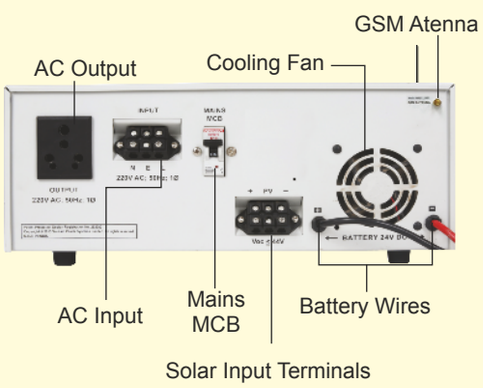
- Hybrid GTI has **Six Stage Charging**. Latest DT-6S Technology removes the build-up of sulphate from battery plates which makes battery charging more efficient. 6-stage charging also helps prolongs battery's life and health.
- Automatic By-Pass System (ABS), in case of UPS failure the ABS present helps to by-pass electricity to load so that uninterrupted power supply can be enjoyed.
- 90V Charging is an advanced feature which charge the batteries of UPS even when the voltage is as low as 85-90V. Ordinary inverter go on battery backup mode when voltage falls below 110V.
- Intelligent 4th Generation Micro Processor based technology.
- GSM Antenna.

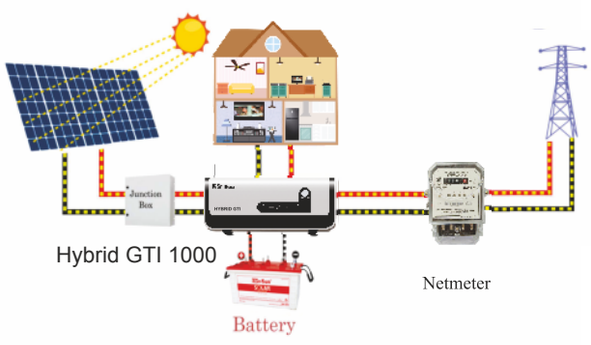
LED INDICATIONS



1. MAINS ON/MCBTRIP: This LED glows when mains available or blinks when mains MCB trips.
2. BACKUP: This LED glows when the system is on backup mode.
3. CHARGE: This graphical symbol will glow when the system is on charging mode. There are two colored LEDs - Green & Yellow.
4. GRID FEED: This graphical symbol glows when the system is feeding power to the grid.
5. BATTERY LOW: This graphical symbol glows when the Battery Voltage is Low.
6. SOLAR ON: This graphical symbol glows when the system is ON. There are two colored LEDs - Green & Yellow.
7. ON / OFF Switch: This glows continuously to indicate the UPS is in power ON mode and in power OFF mode the LED does not glow.

Back Panel





#Values displayed are for reference only.

FEATURES	
Pure Sine Wave	✓
Zero Switchover Time	✓
Built-in Galvanic Isolation Transformer	✓
Intelligent Charge Sharing Between Grid and Solar	✓
Built-in Solar Charge Controller	✓
Noiseless Operation	✓
Grid Feeding With Isolation Transformer	✓
Solar Power Utilization When Grid Is Not Available	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Available Models

Model	Dimension (LxWxH) in mm	Weight
Hybrid GTI 1000	407x304x172	15.5 Kg

*Depending on Model Capacity

What is Solar Street Light?

The solar revolution is also fast extending to outdoor lighting. Solar powered street lighting systems are replacing the conventional grid based lighting. Apart from being power guzzlers, conventional street lighting systems have other disadvantages too. They

- Require expensive and time consuming grid layout
- Cause blackout during power outages
- Have high maintenance costs

Why do we need Lithium ion based Solar Street Light?

Most solar powered streetlights are equipped with lead acid batteries that come with a host of disadvantages. The introduction of Lithium-ion battery technology in outdoor solar lighting overcomes all the problems seen with grid and lead-acid based lights, providing the world with a hassle-free and desirable option.

Advantages

Lithium Ion Battery	Lead Acid Battery
Low installation cost	High installation cost
Inbuilt prevents theft	Prone to theft
Efficient charging on cloudy days	Blackout on cloudy days
NO maintenance	Tubular requires regular maintenance SMF unsuitable for outdoor conditions

Why do we need GSM based Monitoring Platform in Solar Street Light?

Revolutionary new street lights can be controlled and monitored via GSM network using an Android based application. With the help of this platform consumer can monitor and control different parameters like real time data, brightness, ON/OFF, battery status etc.

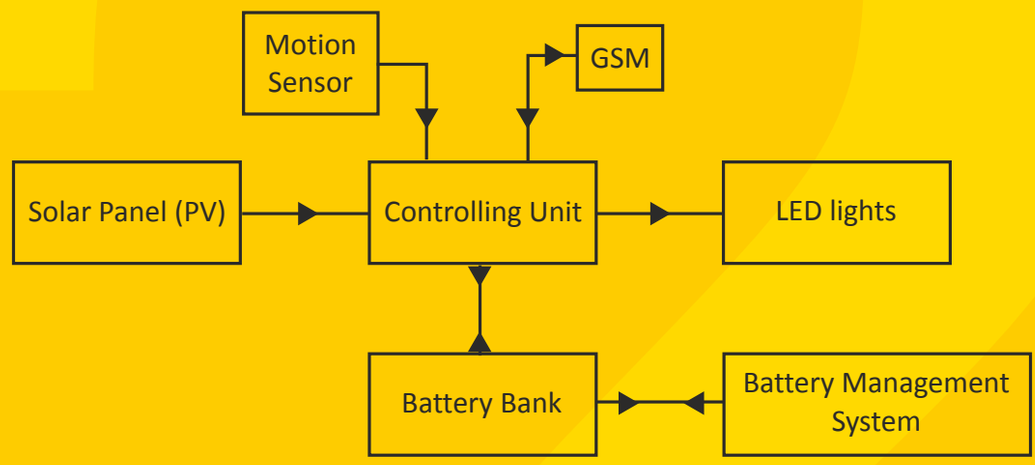
Advantages

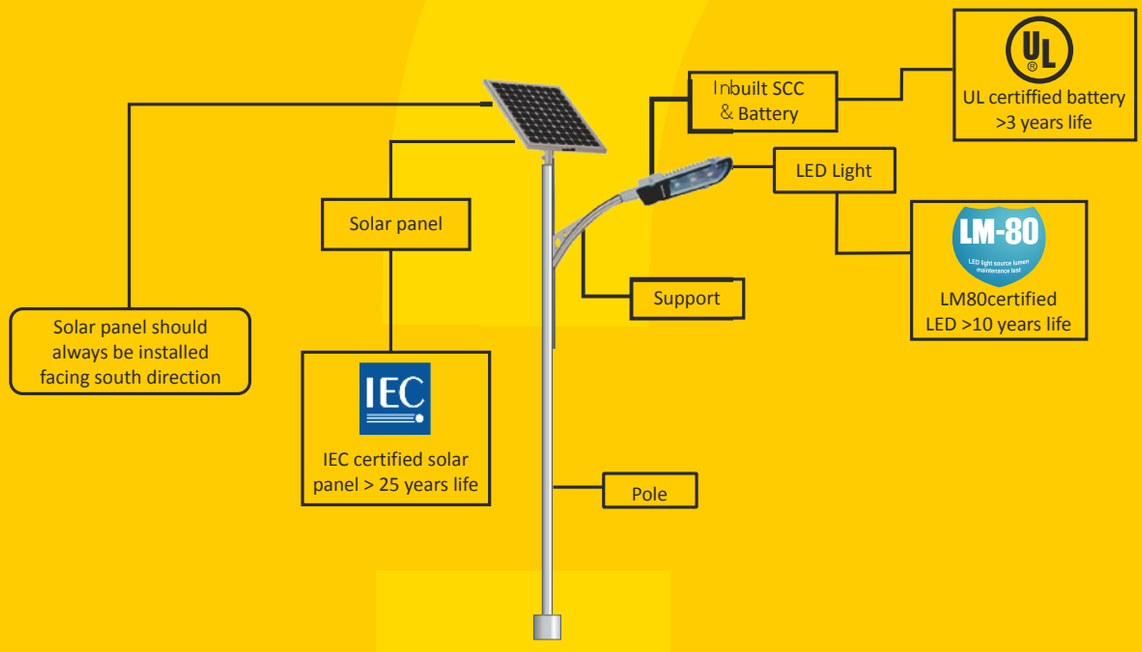
- Can be controlled via GSM network from anywhere in the world.
- Remotely control the on/off/dimming of light.
- The application displays status on battery capacity and provides runtime estimate .
- Dimming level can be adjusted to prolong runtime.
- Control multiple street lights .
- Remote Diagnostics include checking state of system via data analytics including solar panel battery and LED voltages and currents.
- Avoid a site visit to evaluate a complaint.

Application

Lithium ion / GSM based Solar Street Lighting System can be installed in housing societies, large and small campuses, villages – even those without grid electricity, perimeters, guesthouses…the possibilities are endless.

Block diagram of Solar Street Light





Solar Street Light

9 MUST HAVE FEATURES IN YOUR SOLAR STREET LIGHT

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

In - built Lithium Ion Battery : Should have an in-built Lithium Ion battery that negates battery theft.

Quick Charging: The battery should be such that it charges quickly and gives longer backup.

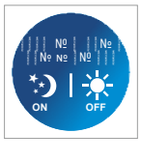
Motion Sensors : Should have motion sensors that dim that automatically adjust brightness for energy efficiency.

Work even in cloudy weather conditions: Solar street lights should be such that they work even in cloudy weather conditions.

Easy to Install: Should have easy, hassle free installation.

Low & easy maintenance: Should be low on maintenance to make it hassle free and cost effective.

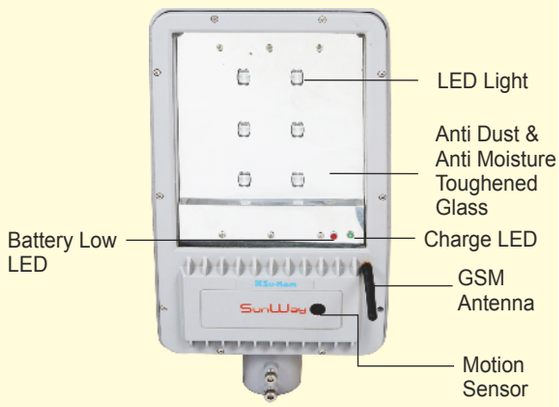
Battery Management System : Street Light should have built-in battery management system to increase battery life.



Dusk Till Dawn Sensor - Solar Street light should have an in-built sensor that automatically senses light and starts charging the battery and when it gets dark outside switches on the street light thus making it completely automatic.

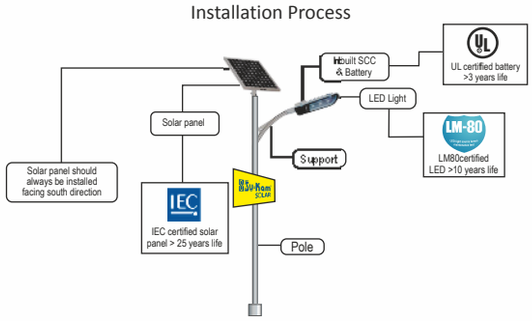
Solar Street Light

LED Solar Street Light 4W/9W/15W/30/W 40W/50W



Back Panel

Installation Process



Govt. of India MNRE Lab Approved

#Values displayed are for reference only.

Su-Kam Solar brings to you a revolutionary new product – the SunWay GSM Enabled Solar Street Light with in-built lithium ion battery. This revolutionary new street light can be controlled and monitored via GSM network using an Android based application. The application is available on Google Play Store by the name of GSM Solar LI Streetlight. So, in whichever corner of the world you are, you can communicate to your street light.

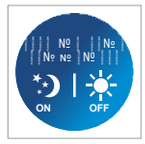
KEY FEATURES

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

In - built Lithium Ion Battery : has an in-built Lithium Ion battery that negates battery theft.

Quick Charging: The battery is be such that it charges quickly and gives longer backup.

Motion Sensors : It has motion sensors that dim that automatically adjust brightness for energy efficiency.

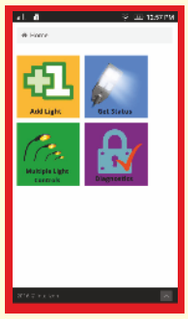
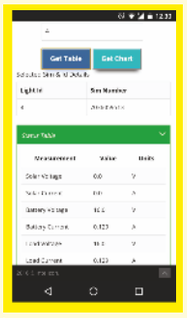
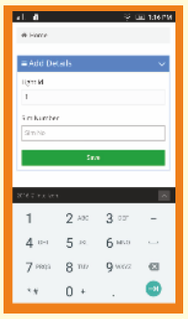


Dusk Till Dawn Sensor - Su-Kam Solar Street light has an in-built sensor that automatically senses light and starts charging the battery and when it gets dark outside switches on the street light thus making it complete automatic.

FEATURES

- Pin & plug installation - Su-Kam Solar Street light has easy, hassle free installation.
- Works even in cloudy weather conditions: Solar street lights are such that they work even in cloudy weather conditions.
- Battery Management System : Su-Kam Solar Street Lights have built-in battery management system to increase battery life.
- Works even in cloudy weather conditions: Su-Kam Solar street lights are designed in such a way that they work even in cloudy weather conditions.
- GSM Enabled : Su-Kam streetlights are GSM enabled so that they can be easily controlled and monitored from anywhere in the world.
- Motion Sensors : Su-Kam Solar Street lights have in-built motion sensors that automatically adjust brightness for energy efficiency.
- Quick charging: Su-Kam Solar Street lights have in-built Lithium ion battery technology that charges quickly and gives longer backup.
- Up to 50% more brightness of light.
- Great return on investment.
- Maintenance free - Su-Kam Solar Street lights are based on in-built Lithium ion battery technology that does not require any regular maintenance.
- Su-Kam Solar Street lights have in-built solar charge controller that increases the efficiency of the lights.

Solar Street Light

Homepage | Diagnostics & Monitoring



ON / OFF / Dimming Control

Su-Kam Solar brings to you a revolutionary new product – the SunWay GSM Enabled Solar Street Light with in-built lithium ion battery. This revolutionary new street light can be controlled and monitored via GSM network using an Android based application. The application is available on Google Play Store by the name of GSM Solar LI Streetlight. So, in whichever corner of the world you are, you can communicate to your street light.

System Efficiency

- Combination of zero wire loss due to the inbuilt battery and low idle current leads to >92% system efficiency.
- Combined with our world's best >150 lumen/W LEDs and special lenses.
- Provides best in class lux levels with lowest power consumption.

Applications

The prolific SunWay GSM Enabled Solar Street Lighting System can be installed in housing societies, large and small campuses, villages – even those without grid electricity, perimeters, guesthouses... the possibilities are endless. All weather proof (IP65 approved). Robot design (MNRE approved).

FEATURES	
Dusk to Dawn	✓
GSM Based Operation	✓
Built-in Li-ion Battery	✓
Motion Sensor	✓
Built-in SCC & BMS	✓
Dimming	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓

Available Models

Product Name	Sunway LI1	Sunway LI2	Sunway LI3	Sunway LI4	Sunway LI5	Sunway LI6
Peak Lux	13@3.5m	21@3.5m	31@4m	37@5m	37@6m	37@7m
Pole to pole distance	8 to 10m	8 to 10m	8 to 10m	10 to 15m	12 to 18m	14 to 20m
Conventional Light	20W CFL	40W tubelight	2x40W tubelight	70W sodium vapor	150W sodium vapor	100W sodium vapor
Equivalent local LED (W)	7 to 9	12 to 15	18 to 21	36 to 40	45 to 50	60 to 65
No of LED	3	3	3	6	9	12
Dimming	NA	2 stage	3 stage	3 stage	3 stage	3 stage
Motion Sensor	NA	NA	NA	Yes	Yes	Yes
Rating (W)	4	9	15	30	40	50
Battery (WH)	38	77	77	154	154	231
Solar Panel (W)	14	26	40	50	60	75
GSM Option	NA	NA	Yes	Yes	Yes	Yes

What is an Elevator/Lift UPS?

An Elevator/Lift UPS is a device that provides uninterrupted power to all lifts and elevators. Most lifts today are fitted with Automatic Rescue Device or ARD. In case of power failure, ARD takes the lift only till the nearest floor. Elevator/Lift UPS on the other hand, is the next step in the evolution of power backup. It gives seamless power to the lift and takes the lift to the destination floor. It will in fact, continue to operate for five minutes or more, depending on battery capacity. It also has the added benefit of giving jerk – free smooth operation.

Why do we need Elevator/Lift UPS?

PARAMETER	ARD	Lift UPS
Non-Stop elevator operation during power failure or fault	✗	✓
REMS (Remote Elevator Management System) using Mobile App (IOS & Anroid)	✗	✓
Automated SMS to designated numbers in case of faults	✗	✓
Compatible with all elevators	✗	✓
Independent of elevator controller	✗	✓

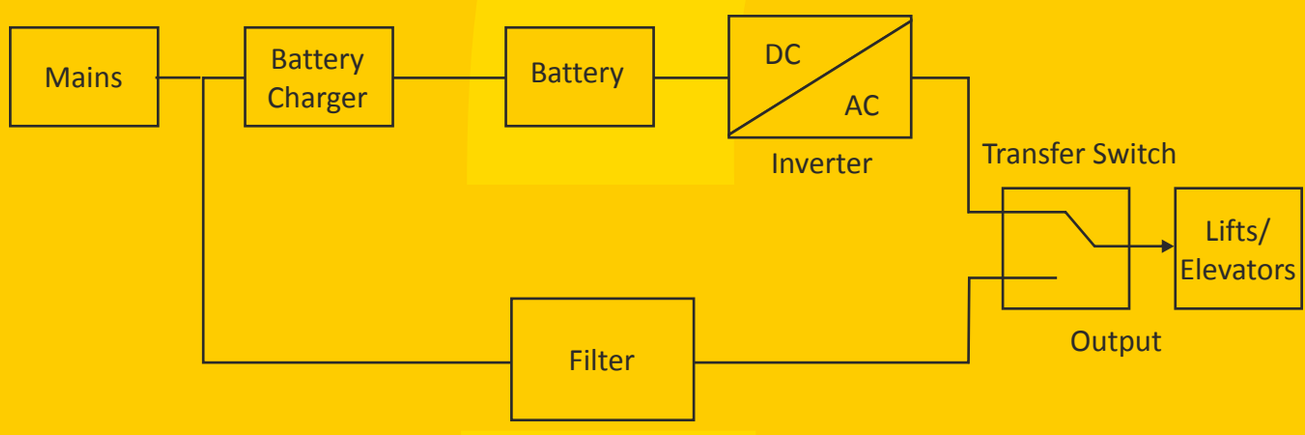
Advantages

- Non-Stop lifts/elevators operation during power failure or fault
- Compatible with all lifts/elevators
- Independent of elevator controller
- Provide jerk free & seamless operation.

Applications

An Elevator/Lift UPS is a powerful and reliable power backup solution for running all types of Lifts and elevators. It provide Emergency & seamless power to lifts/ elevators.

Block Diagram of Elevator/Lift UPS



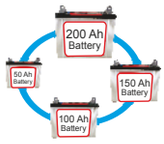
Elevator/Lift UPS

11 MUST HAVE FEATURES IN YOUR Elevator / Lift UPS

Non – Stop Operation: Elevator/Lift UPS protects passengers from jerks with un-interrupted power supply.

Compatible With All Elevators: With a wide range of lifts available in the market, it is important that the Elevator/Lift UPS device should be compatible with all brands, all models of lifts/elevators.

Elevator/Lift UPS should **able to charge batteries of all types** – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.



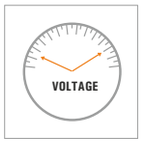
Variable Current Charging that enables UPS to use batteries of any size depending on the required backup time.

RS232 / 485 / Wifi / GSM / Bluetooth Connectivity: Connectivity to your device is important because it allows remote monitoring and controlling. This makes it easy for you to check all the important parameters of your device including faults if any.

The remote monitoring and controlling connectivity of your device should be **backed by a strong App**. The app should be comprehensive and have an easy to navigate interface.

Low Maintenance: With the Elevator/ Lift UPS, the elevator / lift becomes maintenance free.

Pure Sine Wave: It should have Pure Sine Wave output power. Pure Sine Wave power output replicates the kind of power you get from the grid and so is best suited to your appliances.



Wide Input Mains Range: Elevator/Lift UPS should have a wide operating range. It is able to operate in conditions when the voltage is low or high.

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like Lifts/Elevators

Battery Management System : ERD Should have built-in battery management system to increase battery life.

Emergency Rescue Device (3P-3P) - Premium Range

ERD (3P-3P)
(Remote Elevator Management System)
10KVA/180V, 20KVA/180V

LCD Display

During Installation

```
SU-KAM DSP SINE WAVE 3PH
ERD WELCOMES YOU
H/W Ver: 199BS/10/0.1
S/W Ver : BD10/180/0.1
```

On every Scroll

```
MAINS F CUT
```

During ERD Mode on every scrolling and can be hold & Release by Display Button

```
SYS CAP
xxxKVA xxx VDC
LA/SMF
```

During Charger Mode on every scrolling and can be hold & Release by Display Button

```
MAINS L CUT
```

ERD Output

```
ERD – xxx V DC
OP R 230 V 00.0A
OP Y 230 V 00.0A
OP B 230 V 00.0A
```

During Input AC Mains Low Cut

```
MAINS H CUT
```

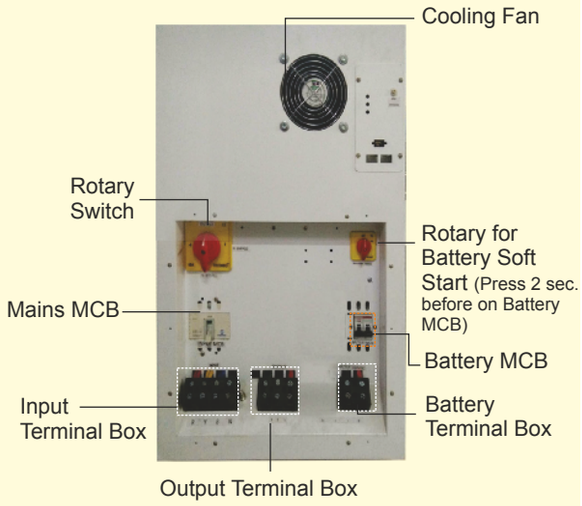
During Mains ON

```
RECT – 230 V R I P
         230 V Y I P
         230 V B I P
OP DC xxx V 15.0A
```

Output Short Circuit

```
PROTECTION
O/P SRT CKT
```

Back Panel



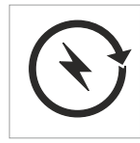
#Values displayed are for reference only.

Su-Kam presents the new generation of 3 Phase Elevator/Lift UPS for a seamless, continuous and jerk free elevator ride even during power failures. It provides emergency backup to the elevator control panel when the mains power fails or drops below an unacceptable level.

KEY FEATURES

Pure Sine Wave: It has Pure Sine Wave output power. Pure Sine Wave power output replicates the kind of power you get from the grid and so is best suited to your appliances.

Non – Stop Operation: Elevator/Lift UPS Protects passengers from jerks with un-interrupted power supply.



Compatible With All Elevators: Su-Kam Elevator/Lift UPS device is compatible with all brands, all models of lifts/elevators.

The remote monitoring and controlling connectivity of your device is backed by a strong App. The app is comprehensive and has an easy to navigate interface.

Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like Lifts/Elevators.

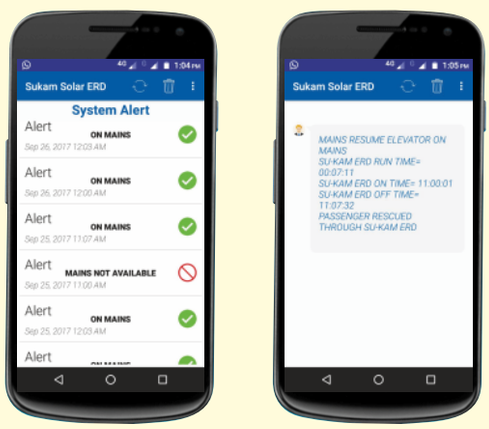
Elevator/Lift UPS is able to charge batteries of all types – Lithium Ion, Lead Acid, Tubular and SMF. This gives you the flexibility to buy the battery that is most suited to your need.

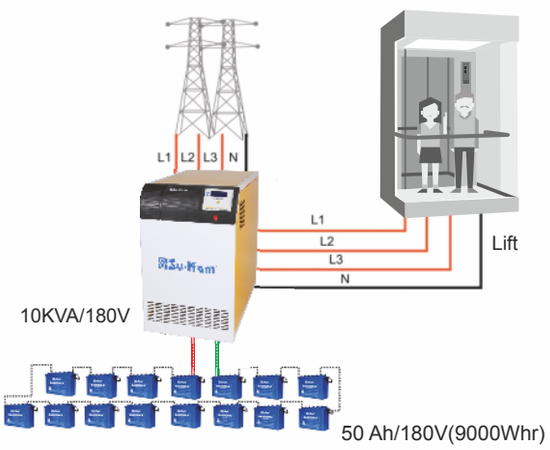
FEATURES

- Automatic Control.
- Keeps the Elevator running non-stop even during power failure.
- Low Investment.
- Low Maintenance.
- Can be monitored through Mobile App.
- Battery Management System.
- Complete Independent Control.
- Compatible with all Elevators .
- Pure Sine Wave Technology.
- Built-in Galvanic Isolation transformer for charging circuitry on mains.
- Pure Sine Wave UPS with inbuilt battery charger.
- Zero Changeover Time from mains mode to battery mode. Perfect for running sensitive equipment like Lifts/Elevators.
- 6 Stage battery charging technology helps in increasing the battery life by providing healthy charging.
- Compatible with batteries of all types and sizes.

Emergency Rescue Device (3P-3P) - Premium Range

ERD (3P-3P)
(Remote Elevator Management System)
10KVA/180V, 20KVA/180V





#Values displayed are for reference only.

Su-Kam has developed a GSM-based application for real-time management of Emergency Recue Device (ERD). It can be connected to Su-Kam's GSM Monitoring Application through which you can access all information related to the functioning of your ERD such as Battery Voltage, Input voltage and current, load percentage, backup time etc. You can also access this App online, no matter which part of the country you are in.

ERD is a very smart rescue device. In case of power failure it will automatically send a text message to your registered mobile number.

ERD transforms Direct Current (DC) to Alternating Current (AC). The battery bank with ERD acts as a reservoir to ensure continuous supply of power. Whenever utility power is not available and even when it is available, its bidirectional behaviour is the same. This ensures reliable and accurate power to load.

Description of Front Panel : On the front panel of ERD, there is an ON/OFF switch, Hold/Scroll switch and an LCD panel. With the help of the LCD panel we can control and monitor the real time status of the ERD.

FEATURES	
Non-Stop elevator operation during power failure or fault	✓
REMS (Remote Elevator Management System) using Mobile App (IOS&Anroid)	✓
Automated SMSs to designated numbers in case of faults	✓
Compatible with all elevators	✓
Independent of elevator controller	✓
RS 232/485/GSM/Wi-Fi/Bluetooth Connectivity	✓
Noiseless Operation	✓
Galvanic Isolation	✓
6 S Battery Charging	✓
Compatible with all types/sizes of batteries	✓

No .OF PASSENGERS	4	6	8	10	11	12
Recommended ERD Capacity (kVA)	10	10	10	20	20	20
Recommended Battery Capacity (Ah)	26	42	65	65	65	100
Recommended No. Of Batteries	15	15	15	15	15	15

Available Models

Model	Dimension (LxWxH) in mm	Weight
10KVA/180VDC	450x765x735	106 Kg
20KVA/180VDC	450x765x735	114 Kg

*Depending on Model Capacity

What is a Battery?

Batteries are electrochemical devices which convert chemical energy into electrical energy by electrochemical oxidation and reduction reactions which occur at the electrodes. A cell consists of an anode where oxidation takes place during discharge, a cathode where reduction takes place and an electrolyte which conducts the ions within the cell.

Why do we need a Battery?

Battery provides the home & industrial power backup solutions. All electric vehicles, telecommunication sector, solar power generation, submarines & small portable electronic appliances require a power source which is used as and when required to run the applications.

Types of Batteries

Primary Batteries: These batteries are not capable of being easily or effectively recharged electrically and hence are discharged once and discarded. Large high capacity primary batteries are used in military applications, signaling, standby power, and so on.

Secondary Batteries: These batteries can be recharged electrically after discharge to their original condition by passing current through them in the opposite direction to that of the discharge current. They are storage devices for electric energy and are known also as ‘‘storage batteries’’ or ‘‘accumulators.

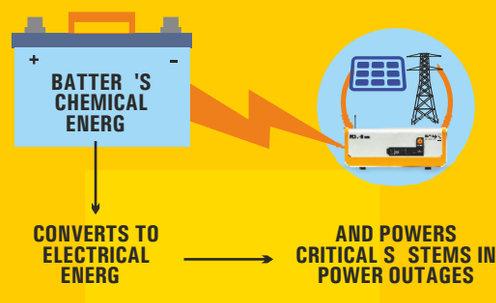
- Lead Acid Battery:
  a. Flat Plate b. Short Tubular c. Tall Tubular
- SMF (Sealed Maintenance Free) VRLA (Valve Regulated Lead Acid)
- Lithium Ion Battery

Advantages of Lead Acid Batteries

- Value for Money: In current price range, lead acid batteries provide the best value for Power and Energy/Kwh.
- Mass Manufactured: Proper sealed and maintenance-free products are mass-produced today.
- Sizes: Lead Acid Batteries are available in all sizes.
- Long life cycle: Lead acid batteries having longest life cycle.
- Re-usable& easily recycled: A large environmental advantage is that they are recycled at an extraordinarily high rate. (97% of lead is recycled and reused in new batteries.)

Function of Lead Acid Battery

These batteries provide electrical power to critical systems in the event of a power outage. Home & industrial systems, emergency lighting systems and many more rely on these batteries to keep us safe without skipping a beat when the lights go out.



Applications

Automotive (SLI – Starting Lighting Ignition), electrical vehicles, golf carts, hybrid vehicles, motive power (traction), standby emergency power backup for telephone exchange, stationery (UPS & Inverter), emergency lighting.

Cross Section view of Lead Acid Tubular Battery

Stronger & more reliable

Advanced spines – for enhanced current flow through the grid for exceptional performance on heavy loads like an AC.

Thicker spines – maintain structural design and decrease failure rate due to corrosion.

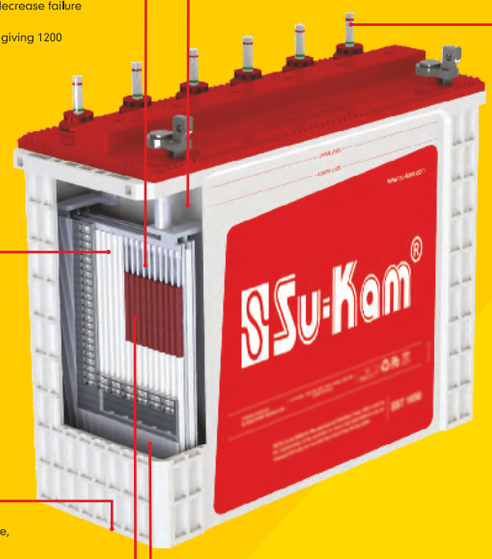
Thicker tubular plates – for better performance, giving 1200 cycles @ 80% depth of discharge.

Longer Life & Reliable backup

Thicker tubular plates – give a better performance, giving 1200 cycles @ 80% depth of discharge (one cycle is one full charge state followed by full discharge).

Less space

Low footprint – of the specially designed battery container, with a lesser base, occupying less space, thus saving on costly floor space.

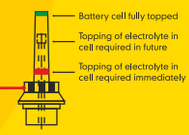


Saves maintenance cost & time

Additional fluidic head space – above battery plates serves longer between watering intervals and avoids frequent topping-up, saving on maintenance.

Easy maintenance

Electrolyte level indicator – shows the level of electrolyte in each cell, making the maintenance much easier.



Risk-free & keeps environment clean

Effective fume arrestor – ensures complete safety, preventing any flame or spark from entering the battery. It saves it from the risk of explosions. It also prevents the release of gasses into the atmosphere.

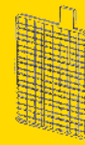
Faster electrochemical reaction

Higher number of ribs – on the separator keeps the acid channel open for faster and better electrochemical reaction.

Prevents deep discharge

High cycle count – from strong plates, formed by HADI machine at 150 bar pressure, prevent the battery from going in deep discharge.

Comparison between Flat Plate & Tubular Batteries



Battery Parameters	Flat Plate	Tubular
Reliability	Reliable	Most reliable
Charge Cycles	50-1000	1100-1800
Electrolyte Stratification Risk	Medium	Low
Thermal Management	Medium	High
Interface Surface Area	Medium	High
Electrical Resistance	Mid-to-low	Low
Life Expectancy	15-18 years	20+ years

Tubular batteries have 20% more electrical capacity than flat plate batteries of comparable size and weight. With less positive plate shedding, tubular batteries also provide up to a 30% longer service life than flat plate batteries.

What is SMF (Sealed Maintenance Free)/(VRLA) Valve Regulated Lead Acid Battery?

All lead-acid batteries release hydrogen from the negative plate and oxygen from the positive plate during charging. VRLA batteries have one-way, pressure-relief valves. Without the ability to retain pressure within the cells, hydrogen and oxygen would be lost to the atmosphere, eventually drying out the electrolyte and separators.

Voltage is electrical pressure (energy per unit of charge). Charge (ampere-hours) is a quantity of electricity. Current (amperes) is electrical flow (charging speed). A battery can only store a certain quantity of electricity. The closer it gets to being fully charged, the slower it must be charged.

Temperature also affects charging. If the right voltage is used for the temperature, a battery will accept charge at its ideal rate. If too much voltage is used, charge will be forced through the battery faster than it can be stored.

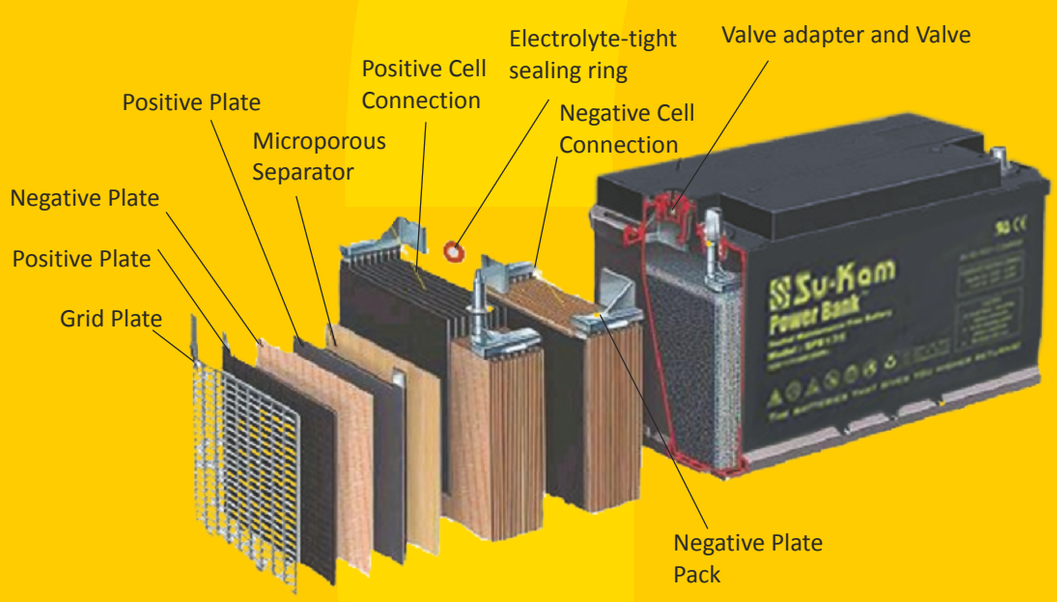
Advantages

- Maintenance free
- Moderate life on float service
- High rate capability
- High charge efficiency
- Available from small single cell unit (2v) to large 48V batteries.

Applications

The major application of the VRLA battery is in the standby power market, ranging from low-power (generally less than 5 KVA) applications such as emergency lighting or uninterruptible power supplies (UPS) for individual computers or work stations to high-power UPS in telecommunications facilities. A continuous supply of power is also critical in areas such as banking, stock exchanges, hospitals, air traffic control centers etc. where brief interruptions pose the risk of loss of critical data or hazards to health and safety.

Cross Section view of VRLA Battery



What is Lithium-ion Battery?

These are the most popular rechargeable batteries with advantages like best energy density, negligible charge loss and no memory effect. During charging, the external current from the charger applies a higher voltage than that in the battery. This forces the current to pass in the reverse direction from the positive to the negative electrode where the lithium ions get embedded in the porous electrode material through a process called Intercalation. The Li- Ions pass through the non aqueous electrolyte and a separator diaphragm. The electrode material is intercalated lithium compound.

Advantages

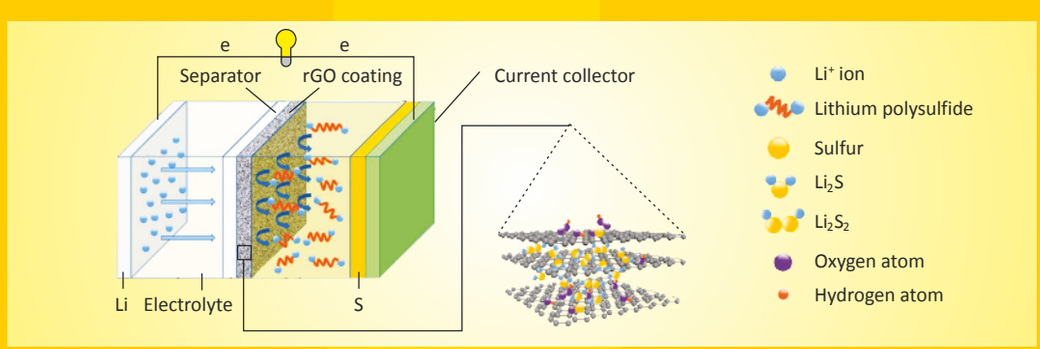
- Sealed cells; no maintenance required, moderate initial cost
- Long life cycle
- Broad temperature range of operation
- Long shelf life & very low self-discharge rate
- Rapid charge capability and high power discharge capability
- High energy efficiency
- High specific energy and energy density

Applications

Consumer electronics such as cell phones, laptop computers and personal data assistants as well as military electronics, including radios, mine detectors and thermal weapons sights. Anticipated applications include aircraft, space craft, satellites and electric or hybrid electric vehicles.

All batteries are vulnerable to damage from excessive discharging and extreme temperatures. Lead-acid batteries are generally less resilient to this kind of abuse and are harmed if discharged too quickly or deeply. Lead-acid batteries lose potential cycles if they are discharged below 50% of their State of Charge (SOC) or if discharged faster than C/8. **While lithium-ion batteries can be discharged to about 80% SOC and at a rate of C/2 without any long term damage.**

A helpful way to think of charging and discharging a battery is to imagine it like a balloon. If you repeatedly inflate a balloon to its maximum capacity and then completely deflate it, the balloon material might fatigue from the excessive stress. Now imagine with another balloon you repeatedly inflate and deflate it from 50% to 90% full, the material will experience less stress and will last longer than the first balloon. The plates inside the battery undergo a comparable stress as the balloon material. In this example, lithium-ion batteries are simply made from a better, stronger balloon material when compared to lead-acid.



5 MUST HAVE FEATURES IN YOUR BATTERY

A fast charge is defined as a method of charge that will return the full capacity in less time. The large surface area of the thin plates used in batteries reduces the current density to a level far lower than normally seen in the fast charging. Batteries should be well designed and manufactured so that they have fast charging without affecting the battery lifecycle, by controlling the temperature rise during fast charging. All batteries should be designed using Powerful C-5 Technology for fast charging.

Battery Cycle Life is defined as the number of complete charge - discharge cycles a battery can perform before its nominal capacity falls below 80% of its initial rated capacity. Key factors affecting cycle life are time and the number of charge-discharge cycles completed. Heavy duty batteries should come with more than 1800 life cycles.

It should require less maintenance and not need water topping too often.

Extra thick plates for excellent discharge performance which increases the battery life.

It should have 99.99% Pure Lead Content for greater battery efficiency.

Tall Tubular Batteries - Premium Range

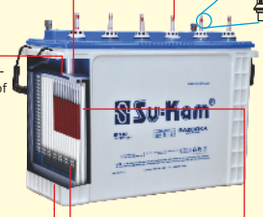
Warrior++ Series
150Ah/1800Whr(36+12)
180Ah/2160Whr(36+12)
200Ah/2400Whr(36+12)

Faster Charging
Quick charging makes it an excellent choice for areas frequent power cuts
Higher number of spines- Plates with advanced grid design of more spines increases the plat surface area, leading to fast charge acceptability. Thus reduces charging time.

Easy Maintenance
Electrolyte level indicator - To show the level of electrolyte in each cell, for easy maintenance

Battery cell fully topped
Topping of electrolyte in cell required in future
Topping of electrolyte in cell required immediate
Risk Free

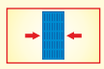
Better Efficiency
Advanced gauntlet design- provides easy movement of electrolyte providing now internal resistance



Effective flame arrestor- To ensure complete safety preventing any flame or spark entering the battery to cause an explosion.

Keep environment clean- Also reduces the release of gasses into the atmosphere, maintaining a clear environment.

Low Footprint
Saves space- The container of the battery is designed with a lesser base to occupy less space, saving on costly floor space



Actual Deep Cycle Battery
The plates are formed by HADI machine at 150 bar pressure, providing strong plates giving high cycle count and preventing the battery from going in deep discharge.

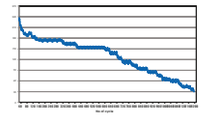
Higher diagonal ribs - Higher number of diagonal ribs on the separator keeps the acid channel open for faster and better electrochemical reaction.

Warrior++ series is the most premium in Su-Kam's battery range. This series has been specially designed for those areas which face long and frequent power cuts. Highlights of this battery series are long life, robust and rugged design to fulfil any kind of power backup demand.

KEY FEATURES

All Su-kam batteries are equipped with C5 charging technology. Now you can charge your batteries with double the charging current and reduce the charging time by half.

Su-Kam heavy duty batteries come with more than 1800 life cycles. As a result our batteries last much longer as compared to other batteries available.



Advanced paste with low antimony alloy reduces self-discharge.

FEATURES

- Special separator used for lower water loss & high puncture resistant & less stratification.
- High packed density for best deep discharge recovery and life improvement.
- Extra thick gauntlets suitable for Indian climatic condition.
- Excellent deep discharge recovery characteristics.
- Superior raw materials for good performance.
- Heavy duty tubular plate cast at high pressure.
- Low internal resistance ensures quick recharge.
- Suitable for long & frequent power.

Benefits

- Long shelf life due to advance paste with minimum water loss & less maintenance.
- Heavy duty spines for excellent cyclic life and deep discharges.
- Value for money where full power backup required for maximum time.

FEATURES	
Pure Lead - 99.9%	✓
Charge with C5 Technology	✓
Charge/Discharge Cycle	1500+
Solar Compatible	✓

Available Models

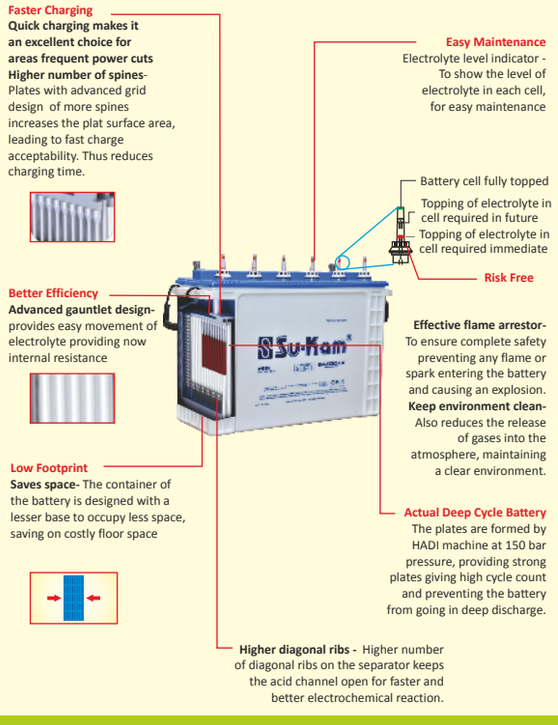
Model	Dimension (LxWxH) in mm	Warranty
Warrior++ 1500	503x193x412	48 months
Warrior++ 1800	503x193x412	48 months
Warrior++ 2000	503x193x412	48 months

Tall Tubular Batteries - Economy Range

Bazooka+ Series
150Ah/1800Whr(24+24)
200Ah/2400Whr(24+24)

Bazooka Series
150Ah/1800Whr(18+18)
180Ah/2160Whr(18+18)

Sumo Series
150Ah/1800Whr(21+21)

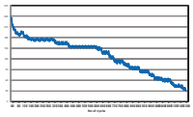


Bazooka & Sumo series are designed for best charging technology. Now you can fully charge these batteries in half the charging time by doubling the charging current. This series has been specially designed for those areas which face long and frequent power cuts. Highlights of these battery series are long life, robust and rugged design to fulfil any kind of power backup demand.

KEY FEATURES

All Su-kam batteries are equipped with C5 charging technology. Now you can charge our batteries with double the charging current and reduce the charging time by half.

Su-Kam heavy duty batteries come with more than 1800 life cycles. As a result our batteries last much longer as compared to other batteries available.



Advanced paste with low antimony alloy reduces self-discharge.

FEATURES

- Special separator used for lower water loss & high puncture resistant & less stratification.
- High packed density for best deep discharge recovery and life improvement.
- Advanced paste with low antimony alloy reduces self-discharge.
- Extra thick gauntlets suitable for Indian climatic condition.
- Excellent deep discharge recovery characteristics.
- Superior raw materials for good performance.
- Heavy duty tubular plate cast at high pressure.
- Low internal resistance ensures quick recharge.
- Suitable for long & frequent power.

Benefits

- Long shelf life due to advance paste with minimum water loss & less maintenance.
- Heavy duty spines for excellent cyclic life and deep discharges.
- Value for money where full power backup required for maximum time.

FEATURES	
Pure Lead - 99.9%	✓
Charge with C5 Technology	✓
Charge/Discharge Cycle	1500+
Solar Compatible	✓

Available Models

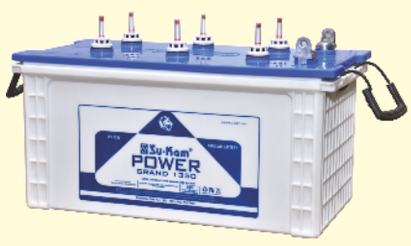
Model	Dimension (LxWxH) in mm	Warranty
Bazooka+ 1500	503x193x412	48 months
Bazooka+ 2000	503x193x412	48 months
Sumo 1650	503x193x412	42 months
Bazooka 150	503x193x361	36 months
Bazooka 180	503x193x361	36 months

*Depending on Model Capacity

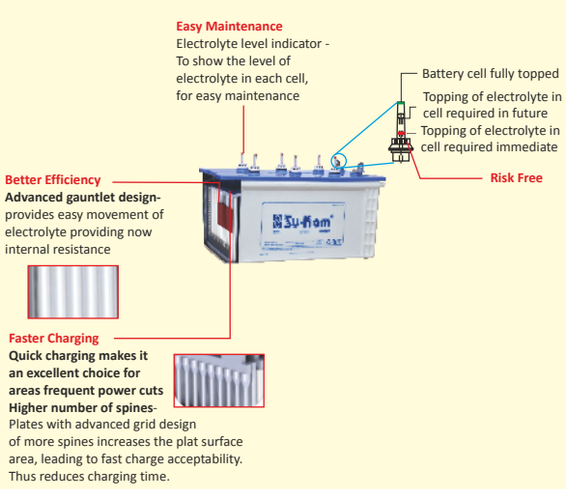
Short Tubular Batteries - Economy Range

Jumboz
150 Ah/1800Whr(24+24)
180 Ah/2160Whr(24+24)

Power Grand
120 Ah/1440Whr(18+18)



Power Supreme
150 Ah/1800Whr(18+18)
100 Ah/1200Whr(18+18)



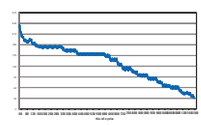
#Values displayed are for reference only.

Jumboz, Power Grand & Power Supreme series are designed for best charging technology. Now you can fully charge these batteries in half the charging time by doubling the charging current. These series have been specially designed for those areas which faces long and frequent power cuts. Highlights of these battery series are long life, robust and rugged design to fulfil any kind of power backup demand.

KEY FEATURES

All Su-kam batteries are equipped with C5 charging technology. Now you can charge our batteries with double the charging current and reduce the charging time by half.

Su-Kam heavy duty batteries come with more than 1800 life cycles. As a result our batteries last much longer as compared to other batteries available.



Advanced paste with low antimony alloy reduces self-discharge.

FEATURES

- Good charge retention leading to long storage life.
- Low internal resistance ensures quick recharge.
- Heavy duty tubular plate cast at high pressure.
- Advanced paste with low antimony alloy reduces self-discharge.
- Superior raw materials for good performance & life.
- Excellent deep discharge recovery characteristics.

Benefits

- Long Shelf life due to advance paste with minimum water loss & less maintenance.
- Heavy duty spines for excellent cyclic life and deep discharges.
- Value for money where full power backup required for maximum time.

FEATURES	
Pure Lead - 99.9%	✓
Charge with C5 Technology	✓
Charge/Discharge Cycle	1500+
Solar Compatible	✓

Available Models

Model	Dimension (LxWxH) in mm	Warranty
Jumboz 150	518x274x286	48 months
Jumboz 180	518x274x286	48 months
Power Grand 1350	518x274x286	36 months
Power Supreme 1650	518x274x286	36 months
Power Supreme 1200	518x274x286	36 months

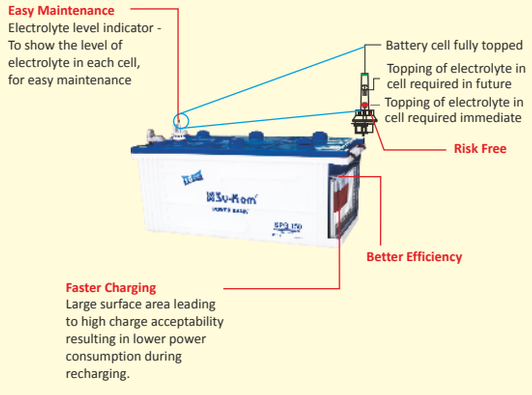
*Depending on Model Capacity

Flat Plate Batteries - Economy Range

Power Bank
Flat Plate Batteries

SID 135 Ah/1620Whr(18+6)

SPG 150 Ah/1800Whr(12+6)



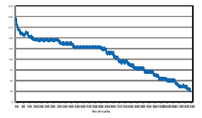
#Values displayed are for reference only.

Su-Kam's lead acid batteries have in built protection against leakage and corrosion. They have also been manufactured to substantially reduce water topping owing to its large electrolyte volume. This series has been specially designed for those areas which faces long and frequent power cuts. Highlights of this battery series are long life and robust design to fulfil any kind of power backup demand.

KEY FEATURES

All Su-kam batteries are equipped with C5 charging technology. Now you can charge our batteries with double the charging current and reduce the charging time by half.

Su-Kam Flat Plate Batteries come with more than 800+ life cycles. As a result our batteries last much longer as compared to other batteries available.



Advanced paste with low antimony alloy reduces self-discharge.

FEATURES

- Thicker plates for excellent discharge performance which increases the battery life.
- Large surface area leading to high charge acceptability resulting in lower power consumption during recharging.
- Pure lead oxide for low maintenance and higher shelf life.
- Double separation between plates to prevent them from shorting and active material shredding.
- Using advance (US) technology for inter cell welding which ensure optimal performance due to low internal resistance.
- Due to additional fluidic head space saves time in terms of less frequent water topping, leading to savings in money and maintenance.
- Electrolyte level indicator shows the level of electrolyte in each cell making the maintenance much easier.
- Less power consumption during recharging, due to high charge efficiency and low internal resistance (due to low antimony, purest oxide and electrolyte).

Benefits

- Value for money • Reliable • Robust, tolerant to rough handling • Longer life • Better back-up

FEATURES	
Pure Lead - 99.9%	✓
Charge with C5 Technology	✓
Charge/Discharge Cycle	800+
Double Separation between plates	✓

Available Models

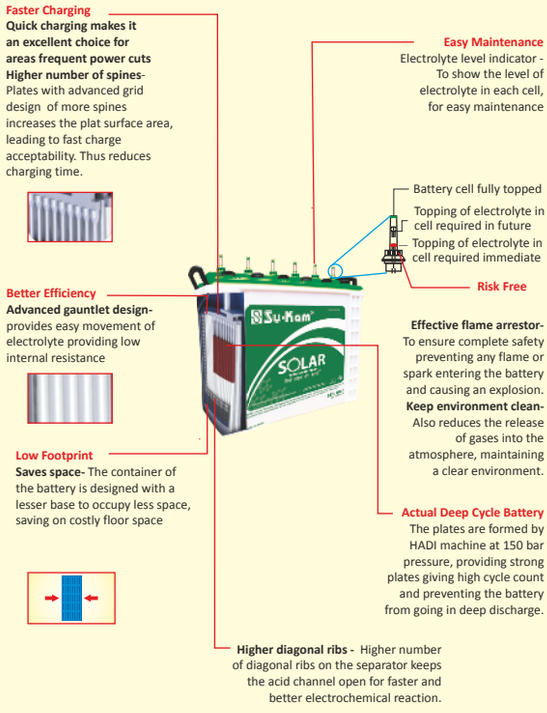
Model	Dimension (LxWxH) in mm	Warranty
Power Bank SID 135	515x212x245	24 months
Power Bank SPG 150	515x212x245	18 months

*Depending on Model Capacity

Solar Tubular Batteries - Premium Range

Solar Battery
STB 20Ah/240Whr
STB 40Ah/480Whr
STB 75Ah/900Whr
STB 100 Ah/1200Whr
STB 120 Ah/1440Whr
STB 150 Ah/1800Whr

STB 150 Ah/1800Whr



All batteries are MNRE Approved.

#Values displayed are for reference only.

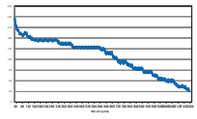
Su-Kam Solar Batteries, designed for use with Solar Systems are built to last longer and are rugged enough to be used in any weather condition. Su-Kam Solar batteries designed at C/10 rating are engineered for the long life requirements of off-grid /hybrid and DC based systems and residential systems.

KEY FEATURES

C-5 TECHNOLOGY SUPER FAST CHARGING

All Su-kam batteries are equipped with C5 charging technology. Now you can charge our batteries with double the charging current and reduce the charging time by half.

Su-Kam heavy duty batteries come with more than 1800 life cycles. As a result our batteries last much longer as compared to other batteries available.



Advanced paste with low antimony alloy reduces self-discharge.

FEATURES

- Su-Kam Solar batteries are designed at C/10 rating for deep discharge performance • They have the capacity to sustain partial state of discharge • Ah efficiency of the battery >90%; • Wh efficiency >= 75% • Endurance Test is qualified as per IS 13369:1992
- **Economical:** Operating cost is quite low hence it is pocket friendly.
- **Certifications :** TUV IS 13369:1992 Certified • MNRE, Govt. of India approved
- **Convenient:** Su-Kam Solar batteries need water topping twice a year. • The working life of a battery depends upon the discharge rate of battery every time. • Partial discharge of the battery leads to greater number of cycles. • Deep discharge - 70 to 80% leads to decrease in the working life of the battery.

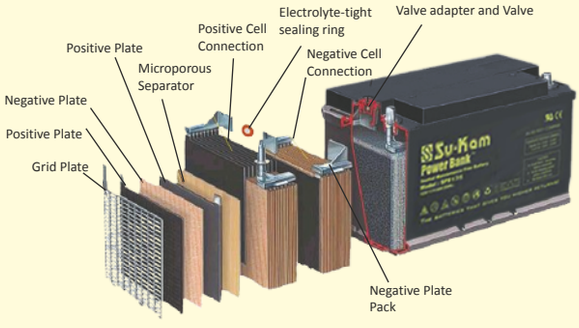
FEATURES	
Pure Lead - 99.9%	✓
Charge with C5 Technology	✘
Charge/Discharge Cycle	1500+

Available Models

Model	Dimension (LxWxH) in mm	Warranty
Solar 20 Ah	258x172x238	36 months
Solar 40 Ah	410x175x250	36 months
Solar 75 Ah	515x215x250	36 months
Solar 100 Ah	515x215x250	36 months
Solar 120 Ah	518x274x286	36 months
Solar 150 Ah	503x193x412	48 months
Solar 200 Ah	503x183x412	36 months

Sealed Maintenance Free (SMF) Batteries - Standard Range

SPB
SPB 7.2 Ah/86.40 Whr
SPB 12 Ah/144 Whr
SPB 18 Ah/216 Whr
SPB 28 Ah/336 Whr
SPB 50 Ah/600 Whr
SPB 70 Ah/840 Whr
SPB 100 Ah/1200 Whr
SPB 120 Ah/1440 Whr
SPB 135 Ah/1620 Whr
SPB 150 Ah/1800 Whr
SPB 165 Ah/1980 Whr
SPB 200 Ah/2400 Whr
SPB 250 Ah/3000 Whr



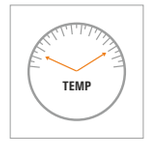
#Values displayed are for reference only.

Su-Kam has come up with their latest power bank series of Sealed Maintenance Free (SMF) batteries that are specially designed for optimum performance, very long life and high reliability. These are eminently suitable for a wide range of applications. SMF batteries do not emit corrosive gases and are leak proof. They have stable and reliable capacity. SMF batteries guarantee a long service life in standby or cyclic service. The computer-aided design and the manufacturing expertise of Su-Kam, ensure the best quality products in the industry. Su-Kam's SMF batteries are the perfect match for your inverter or UPS; they can perform under extreme conditions and can withstand deep discharge and overcharge as well.

KEY FEATURES

All Su-kam batteries are equipped with C5 charging technology. Now you can charge our batteries with double the charging current and reduce the charging time by half.

Wide ranging operating temperature. Su-Kam batteries are specially designed to operate within a wide temperature range.



Su-Kam SMF batteries come with more than 1000+ life cycles. As a result our batteries last much longer as compared to other batteries available.

Recovery after overdischarge. The glass fibre separators, combined with special electrolyte additives, allow Su-Kam batteries to continue to accept charging current even in cases of over-discharge or after long storage periods.

FEATURES

- Total absence of maintenance. The gases which are generated by the electrolysis of water during the period of overcharge are completely recombined in the elements thereby eliminating the need for periodic addition of water.
- Sealed construction - The 'sealed' construction, typical of all Su-Kam batteries permits a safe use in any position without any leakage of electrolyte and/or reduction.
- High energy density - the use of highly porous glass fibre separators permits the maximum possible energy density per unit of volume and/or weight.

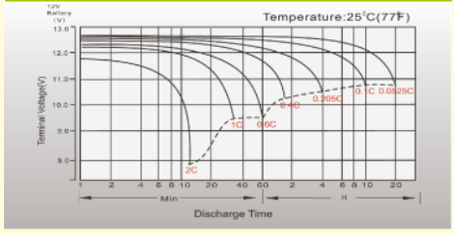
SMF Batteries - Standard Range

SPECIFICATIONS

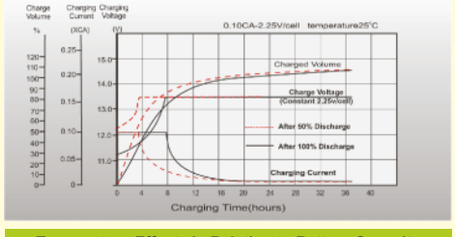
Model	Nominal Voltage (V)	Rated Capacity		Dimension			Weight (Kg.)
		20HR	10HR	L	W	H	
SPB 7.2 AH	12V	7.2	6.70	151	65	94.5	2.36
SPB 12 AH	12V	12.0	11.16	151	98	95	3.60
SPB 18 AH	12V	18.0	16.74	181.5	77	167.5	5.32
SPB 28 AH	12V	28.0	26.04	165	125	175	9.50
SPB 50 AH	12V	52.0	50.00	257	132	200	16.00
SPB 70 AH	12V	72.8	70.00	348	167	178	21.60
SPB 100 AH	12V	104.0	100.00	330	173	212	30.00
SPB 120 AH	12V	124.8	120.00	410	177	225	35.00
SPB 135 AH	12V	140.4	135.00	344	171	274	41.20
SPB 150 AH	12V	156.0	150.00	485	170	240	42.50
SPB 165 AH	12V	171.6	165.00	530	209	214	50.20
SPB 200 AH	12V	208.0	200.00	522	240	218	61.00
SPB 250 AH	12V	260.0	250.00	522	268	220	73.00

Performance Characteristics of SMF Battery

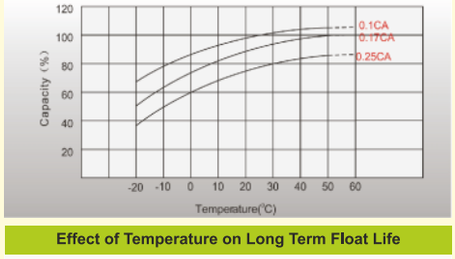
Discharge Characteristics



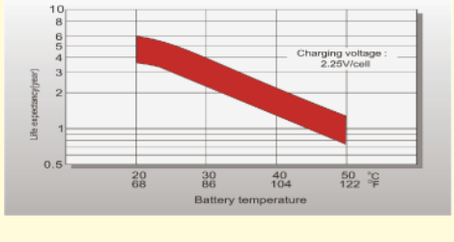
Float Charging Characteristics



Temperature Effects in Relation to Battery Capacity



Effect of Temperature on Long Term Float Life



- Recovery after over-discharge. The glass fibre separators combined with special electrolyte additives allow Su-Kam batteries to continue to accept charging current, even in cases of over-discharge or after long storage periods.
- Low self-discharge - the perfect sealing of the battery case and the use of pure Pb-Ca alloy grids keep the self-discharge values below 3% of battery capacity per month.
- Long life. Both the positive and negative plates have been optimized to obtain excellent results in either cyclic or stand-by use.
- Wide ranging operating temperature - Su-Kam batteries are specially designed to operate within a wide temperature range.

FEATURES	
Excellent Deep Discharge Recovery	✓
Wide Operating Temperature Range	✓
High Energy Density	✓
Excellent Charge Retention	✓

Applications

Solar Applications, Uninterrupted Power Supply (UPS), Electric Power System (EPS), Emergency Backup Power Supply, Emergency Light, Railway Signal, Aircraft Signal, Alarm & Security System, Electronic Apparatus & Equipment, Communication Power Supply, DC Power Supply, Auto Control System

What is Battery Management System?

A Battery Management System (BMS) is any electronic system that manages a rechargeable battery (cell or battery pack), such as by protecting the battery from operating outside its Safe Operating Area, monitoring its state, controlling its environment, authenticating it and / or balancing/equalizing it.

Why do we need a Battery Management System?

If more than 1 battery is connected in a series, a normal system creates slight voltage difference between the batteries during the charging & discharging process. Due to this voltage gap, batteries get damaged or the system gives backup problem. For rectification of this problem, customer should use a battery management system which equalizes & manages the battery bank. It also protects from over/under-charging.

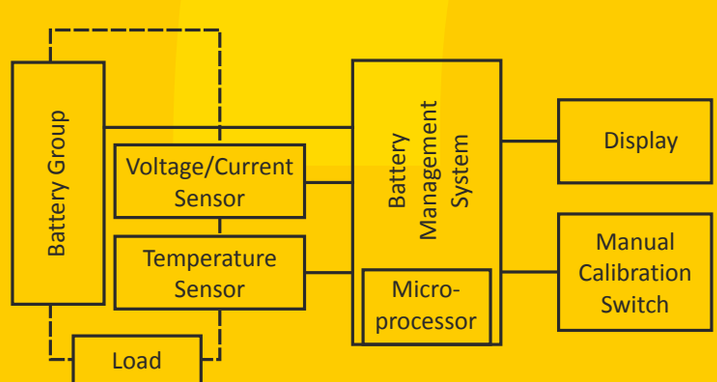
Advantages

- It protects battery bank from over/under-charging.
- Increase Battery Life up to 35%
- Reduces the battery replacement which leads to great savings.
- Equalizes the battery bank.

Applications

Battery Management System is widely used in telecom industry, solar systems, electronic vehicles, automotive industry and all other electronic devices where we use more than one battery.

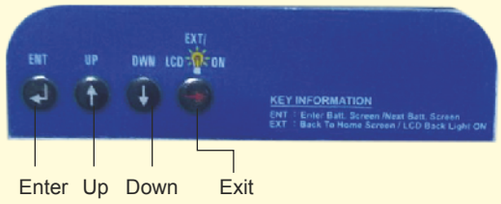
Block diagram of Battery Management System



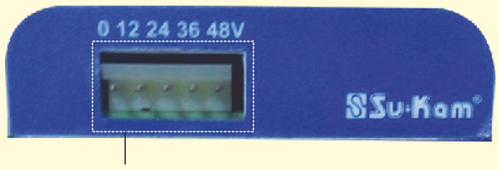
Battery Management System - Battery Accessories

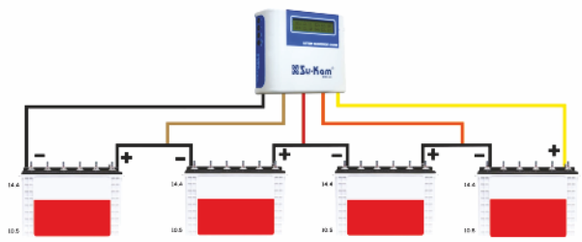
Battery Management System (BMS)

Side Panels



1. Enter Switch helps in entering System Settings and do battery calibration.
2. UP Switch helps in increasing Battery Voltage manually
3. Down Switch helps to decrease Battery Voltage manually
4. Exit/Display ON Switch is for Display ON or return to home screen.



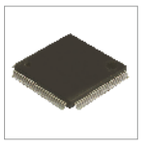


#Values displayed are for reference only.

When two or more batteries are used in series in a battery bank then some batteries get overcharged while some remain undercharged. Due to this the battery bank is not able to perform to its full potential. The Battery Management System basically transfers the voltage from the battery with higher charge to the battery with less charge thus equalizing all batteries at the same voltage. With this technique all the batteries get charged at an equal voltage thus greatly increasing the life of the batteries.

Su-Kam Battery Management System is a compact and light weight product designed to extract maximum power from your battery bank. It equalizes all batteries thereby reducing the losses of an imbalanced battery bank.

KEY FEATURES



The Intelligent Micro Processor in BMS controls all the internal processes smoothly.

Zero Idle Current - Generally, other Battery Management Systems use little amount of stored power while in idle condition. But the Su-Kam BMS is smartly designed to consume zero power from the battery while in idle condition.

Appropriate for all types of Lead Acid and SMF Batteries: BMS can be easily used in all types of lead acid batteries like GEL, Sealed and AGM. It also works with conventional lead acid and SMF batteries.

FEATURES

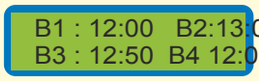
- Active Equalization Technique Based on Flash Micro-controller: Su-kam's Battery Management System is based on the latest flash microcontroller based technology that equalizes batteries connected in series. It greatly increases their efficiency and prolongs overall life.
- In Built LCD Display for Easy Monitoring And Calibration: Battery Management System is provided with in-built LCD display showing battery voltages and its states of equalization. It has a built-in back light feature making it easy to see display parameters. Through the LCD battery voltages can be calibrated at correct voltages for overall higher efficiency of the system.
- Enhances And Expands Battery Life: Battery Management System equalizes all batteries to the same voltage level. It does this simply by transferring voltage from higher charged battery to low charged battery. All batteries are now at one voltage level, thus preventing overcharging and undercharging which in turn greatly increasing battery life.
- Ideal Fit for Battery Connected Series: BMS is designed to get installed very easily with batteries connected in series. Minimum of 2 and maximum 4 batteries can be connected with one BMS system. That means one BMS system can equalize 4 batteries at the same time. BMS has 5 output leads provided at the back for easy and quick connection to batteries.

Battery Management System - Battery Accessories

Solar Battery Management System (BMS)

- Save Excess Money Spent on Battery Replacement: Using BMS increases battery life as it prevents undercharging and overcharging thus eliminating the need for a new battery. No battery replacement means no extra money spent.
- Appropriate for all types of Lead Acid and SMF Batteries: BMS can be easily used in all types of lead acid batteries like GEL, Sealed and AGM. It also works with conventional lead acid and SMF batteries.
- Operated in all 3 Modes - Charging, Discharging And idle Mode: BMS is designed to equalize your battery at any time. While charging the batteries, discharging and even when the batteries are not in use. It does not need to be plugged in, just connect it and it is ready for use.
- Can accommodate unlimited number of batteries using multiple units: BMS is not limited to 4 batteries. With a larger battery bank, multiple units of BMS can be used. To equalize 5 or more number of batteries together, 2 or more BMS units can be used at the same time, thus saving valuable time.

LCD Display



Imbalance Battery Bank

Balanced Battery Bank

Manual Calibration

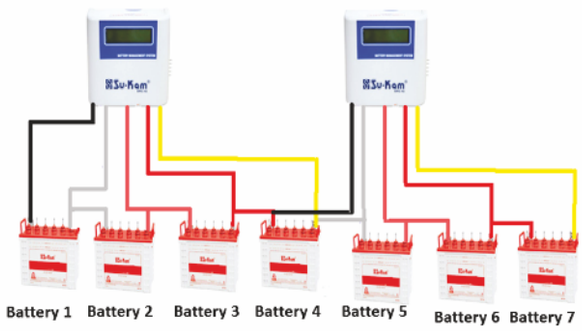
Manually Calibrate Battery Voltage

Equalization under process

Eualization Done

No. of Batteries	System Vol.	No. of BMS Unit
2 to 4	24 to 48V	1
5 to 7	60 to 84V	2
8 to 10	96 to 120V	3
11 to 13	120 to 156V	4
14 to 16	168 to 192V	5
17 to 19	204 to 228V	6
20 to 22	240 to 264V	7
23 to 25	276 to 300V	8
26 to 28V	312 to 336V	9
28 to 31	348 to 372V	10

FEATURES	
Zero Idle Current	✓
Micro Controller Based Processing	✓
LCD Display For Real Time Date	✓
Appropriate For All Types/Sizes Of Batteries	✓
Overcharging & Undercharging Protection	✓
Operate In All Three Modes (Charging, Discharging & Idle)	✓
Required Grid Power For Functioning	✗



#Values displayed are for reference only.

Applications:
Solar Systems, Automotive Industries, Battery Banks, Electronic Vehicles, Telecom Industry.

Available Models

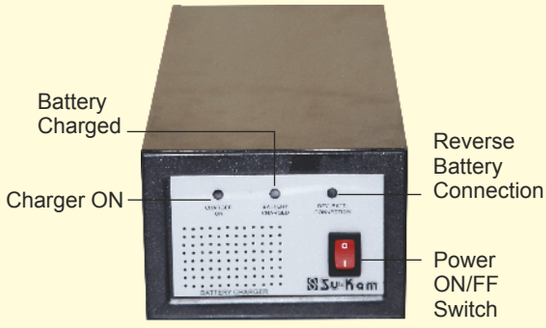
Model	Dimension (LxWxH) in mm	Weight
BMS 48V	114x135x53	0.7 Kg

*Depending on Model Capacity

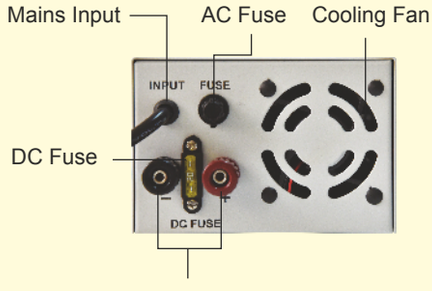
High Frequency Battery Charger - Battery Accessories

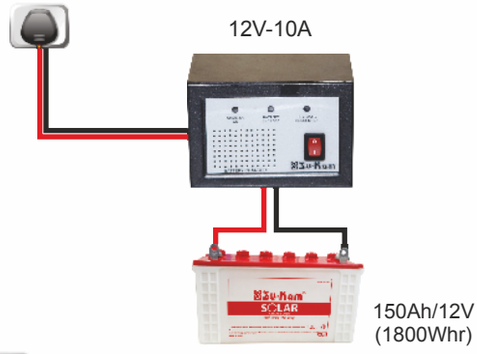
SMPS
High Frequency Battery Charger
12V-10A, 24V-10A, 48V-10A

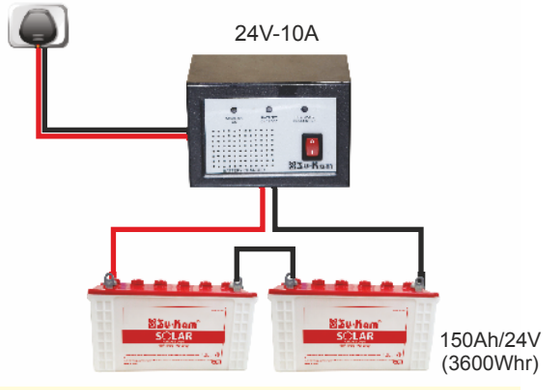
12V-10A / 24V-10A



Back Panel





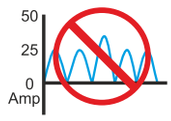


#Values displayed are for reference only.

High Frequency SMPS based battery chargers have been designed to continuously charge a Lead - acid or Sealed Maintenance Free Battery with Constant Voltage and Constant Current. The conventional charger using 50 Hz transformer and thyristor (SCR) has peak charging current which is almost twice the required average charging current and hence reduces the battery life.

The new chargers have high frequency operations and deliver a pure DC Current to the battery hence enhancing the battery life. The over voltage, over current protections make it less vulnerable to voltage fluctuations and high current. In case of a reverse battery connection, the D.C. Fuse at the output blows protecting the charger. The battery charger will automatically protect and stop charging if the load current exceeds the normal charging current.

KEY FEATURES

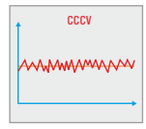


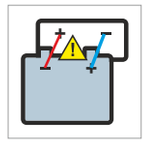
Su-Kam's High Frequency Battery Charger charges battery using pure DC current that produces lesser harmonics as compared to other battery charger. This extends the battery life by about 6 months.

Noiseless Operation - Su-Kam's High Frequency Battery Charger is a unique product which eliminates the need of a heavy power back up systems/loads while avoiding any sound or noise pollution.

Su-Kam's High Frequency Battery Charger have Six Stage Charging. Latest DT-6S technology removes the build-up of sulphate from battery plates which makes battery charging more efficient. 6-stage charging also helps prolongs battery's life and health.

Constant Current Constant Voltage (CCCV) : It ensures healthy battery charging by regulating the current and voltage to the battery even during power fluctuation.





Reverse Battery Protection: Warns you when you have connected the battery in reverse polarity, thereby protecting charger from damage.

FEATURES

- Constant Current Constant Voltage (CCCV) : It ensures healthy battery charging by regulating the current and voltage to the battery even during power fluctuation
- Noiseless Operation - Su-Kam's High Frequency Battery Charger is a unique product which eliminates the need of heavy power back up systems/loads while avoiding any sound or noise pollution.
- Over Temperature Protected.
- Su-Kam's High Frequency Battery Chargers have Six Stage Charging. Latest DT-6S technology removes the build-up of sulphate from battery plates which makes battery charging more efficient. 6-stage charging also helps prolongs battery's life and health.

High Frequency Battery Charger - Battery Accessories

SMPS
High Frequency Battery Charger
12V-10A, 24V-10A, 48V-10A

48V-10A

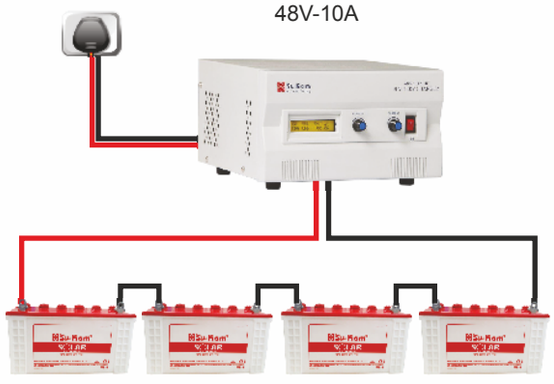
Front Panel

LCD Display

Automatic Charging Mode

Fast Charging

48V-10A



150Ah/48V (7200Whr)

#Values displayed are for reference only.

- High Frequency Technology - The SMPS High Frequency Battery Charger is smart enough to charge more swiftly as compared to other battery charger. Example: If other battery charger available in the market charges 40% battery in an hour* then the SMPS High Frequency Battery Charger charges battery 30% more than that of other battery charger in one hour*.
- Reverse Battery Protection - The SMPS High Frequency Battery Charger protects your battery when it is connected inappropriately. An LED signal system alerts you to change the connection mode.
- Over Charge Protection - The SMPS High Frequency Battery Charger protects your battery during over charge conditions. If the battery charges completely, the battery charger automatically cuts down the current flow into the battery.
- Battery High Voltage Protection - The SMPS High Frequency Battery Charger stops current flow above the required voltage to your battery. In the case of over voltage, the Battery Charger automatically cuts down the current flow into the battery.
- Short Circuit Protection - The SMPS High Frequency Battery Charger is enabled with a unique technology that shields your battery during Short Circuit.
- Offers wide output voltage and current range.
- Offers wide user selectable output voltage and current range (48V model).
- User friendly LCD Display for monitoring and controlling the charger parameters (48V model).
- Compact and light weight.

LCD Display:
Charger ON: When Battery is getting charged.
Battery Charged: It gets ON when battery is fully charged
Reverse Battery: It gets ON when battery is connected wrongly
Power ON/OFF Switch

FEATURES	
Constant Current Constant Voltage	✓
Micro Processor Based Functioning	✓
Noiseless Operation	✓
Pure DC Charing	✓
Reverse Battery Protection	✓
6 Stage Charging	✓
Over Temperature Efficiency	✓

Applications*
Fork Lifts Battery, Solar Battery, E-rickshaw, Inverter/ups Battery, Charging Car Battery, Revival Center, Generator Battery

Available Models

Model	Dimension (LxWxH) in mm	Weight
12V - 10A	157x100.8x320	2.3 Kg
24V - 10A	157x100.8x320	2.3 Kg
48V - 10A	250x250x140	4.3 Kg

*Depending on Model Capacity

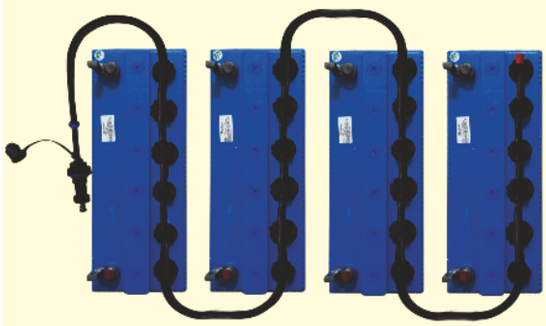
Water Topping Kit - Battery Accessories

Water Topping Kit

Water Topping Installation Diagram

6 Cell / 12 Volt Layout (Tubular Battery)

12 Cell / 24 Volt Layout (Tubular Battery)



24 Cell / 48 Volt Layout (Tubular Battery)

#Values displayed are for reference only.

Su-Kam's water topping kit makes the tedious task of battery water refilling 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 burns and spillages. Its quick coupling allows the system to be connected to a water supply that guarantees zero water spillage. Once connected, water flows into each cell uniformly until it reaches the correct level. A flow indicator built into the water supply gives an indication when the process is complete. With Su-Kam's battery water topping kit the entire process takes you a mere 30 seconds to execute.

KEY FEATURES

Uniform Electrolyte Level -The battery water topping kit ensures equal electrolyte level in all the cells through pressure valves that shut on attaining the required level of electrolyte

Clampless Tube - Due to its high flexibility and ability to maneuver the clampless tube makes the water topping kit easy to install

Single Point Multi Feeder- Battery water topping kit fills water accurately in multiple cells with the help of one single point feeder tube

De-Gas Chamber - The valve allows each cell to vent gas effectively. Gases leave the cell through the de-gas chamber separated from the incoming water.

Shock Proof : Su-Kam Battery Topping ensures safety to humans from electrocution.

FEATURES / BENEFITS

- Cost Savings: It saves you labor cost. After installing your Battery Water system you will realize other cost benefits including extended battery life, increased performance, cleaner floors, equipment and battery tops.
- Extended Battery Life & Performance : A properly watered battery lasts longer and performs better. Overfilling a battery results in loss of acid, while charging with low electrolyte levels will result in permanent damage to the lead plates. Both will result in loss of capacity and life expectancy.
- Safety From Burns : Fill batteries without having to remove the vent covers. No battery acid burns, ruined clothing & noxious fumes.
- Time Saving Convenience : Snap on/snap off water connections and fast filling turn the often ignored task of watering batteries into a quick, simple task allowing you to fill each battery in 60 seconds or less.
- Install It And Forget It : No need to remove the water topping kit once it is installed with battery. You can keep the battery from 0 to 65 degree Celsius without any fear of degradation of the assembly.

Battery Trolley - Battery Accessories

Battery Trolley

#Values displayed are for reference only.

It is very important to keep battery safe in a trolley protecting yourself against leakage of acid from batteries. Choose from Su-Kam's range of battery trolleys that are made from highest quality plastic and are suitable for all conditions.

KEY FEATURES

Extra Durable - Made from tough, long lasting PPCP compound material which does not get destroyed even if there is leakage / spillage from batteries.

Ease to Move - Sturdy yet smooth wheels enabling extra ease of movement while carrying the bulky battery.

Extra Space Saving - Stacks up with Inverter / UPS neatly in a corner, thus taking less space. Aesthetically designed to match.

Extra Convenient - In built ribs for smooth in and out movement of battery without getting stuck.

FEATURES

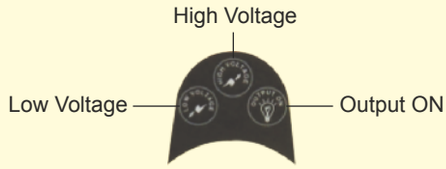
- Extra durable - Made from tough, long lasting PPCP compound material which does not get destroyed even if there is leakage / spillage from batteries.
- Extra convenient - In built ribs for smooth in and out movement of battery without getting stuck.
- Extra ease of movement - Sturdy yet smooth wheels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

Accessories

Power Guard (6 & 16 Amp)

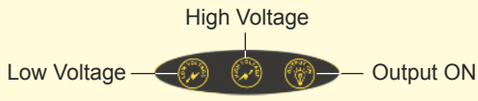
6 Amp

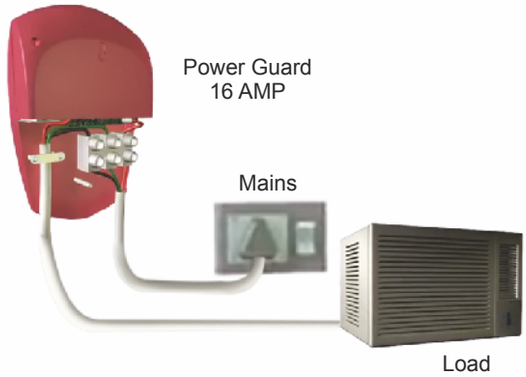
LED Indications



16 Amp

LED Indications





#Values displayed are for reference only.

Su-Kam's Power Guard (an intelligent stabilizer) increases efficiency and acts as an insurance against power fluctuations that can damage electrical appliances and electronic devices. The functionality of Power Guard is to detect and protect electrical appliances and electronic devices against high voltage, low voltage, surges, spikes and frequency variations. Power Guard enables stabilized voltage supply to the connected electrical appliance and electronic device, increasing its longevity and minimizing the risk of damage.

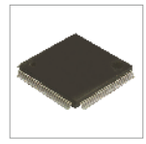
Power Guard (an intelligent stabilizer) is embedded with unique advanced features like Zero Voltage Switching (ZVS), Zero Power Consumption (ZPC) and Voltage Cut-Off Display (VCD). A Microprocessor Chip and On-Screen Display (OSD) control these advanced and basic functions.

KEY FEATURES

Zero Power Consumption (ZPC): Power Guard is smartly designed to consume zero power for operating. It reduces the energy consumption by 11.5%.

Zero Voltage Switching (ZVS): This acts like a life insurance for electrical appliances. It also guarantees longevity of the components inside the electrical appliances.

ZERO Voltage Switching (ZVS)



Intelligent Micro Processor - Power Guard controls all the internal processes and make them fast & smooth.

FEATURES

- Portable Technology: Universal Reception System install.
- Voltage Cut-off Display (VCD): Displays voltage cut-off and voltage supply - Auto Restoration. It also rescues electrical appliances from breakdown and acts as insurance against power fluctuations.
- Universal Plug-in (6Amp): Adaptable to American plug - 2/3 Flat Pin, adaptable to UK plug - BS1363 and adaptable to Indian plug - Round Pin BS 546 (Operates both at 110V & 220V) No adapters required thus no additional cost incurred.
- Aesthetically Designed Nano Stabilizer (16Amp): Appropriate voltage supply to heavy-duty electrical appliances. Aesthetically designed to suit the need of modern consumer. Protects heavy-duty electrical appliances from high & low voltage. It's sleek, It's unique, It's NANO technology In-built Intelligent Voltage Recognition System.

Applications (6Amp): Ideal for smaller household appliances like Vacuum Cleaners, Speakers, Play Stations, LED/LCD TV, Laptop, i-Phone Charger, Home Theater & other sensitive equipment.

Applications (16Amp):
AC, Microwave Oven, Refrigerator & other heavy duty appliances.

Su-Kam®

Su-Kam Power Systems Limited
Corporate Office : 54, Udyog Vihar, Phase VI, Sector-37,
Gurgaon-122001, Haryana, INDIA.
● Toll Free No. 1800 102 7555 ● Tel : +91-124-4170500
● website : www.su-kam.com, www.sukam-solar.com