

## SU-KAM OFFICES ADDRESSES

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**Su-Kam**  
www.su-kam.com

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CORP OFF: 54, SECTOR-37, PH-VLDISTT. GURGAON (HARYANA) INDIA  
REGD.OFF: WZ-1401/2, NANGAL RAYA, NEW DELHI-46

## USER'S MANUAL (IFU)

### PURE SINE WAVE HOME UPS MATRIX 1400VA / 24V

Graphical  
LCD  
Display

### Salient features

- ◆ Pure Sine Wave output.
- ◆ Built-in sealed maintenance free (SMF) batteries.
- ◆ Fuzzy logic control- a unique & advanced technology.
- ◆ Smart Overload Sense and Short Circuit Protection.
- ◆ Optional No Load Shutdown.
- ◆ Automatic Low Battery Cutout.
- ◆ Smart SMPS based fast battery charger with automatic power factor correction.
- ◆ Instant switch-over to protect sensitive appliances.
- ◆ Battery lasts 50% longer than ordinary battery.
- ◆ User-friendly Graphical LCD Display.
- ◆ Future Expandability possible.

#### GLOBAL CERTIFICATIONS:

ISO 9001 : 2000  
ISO 14001:2004

R&D  
Recognised  
by  
MINISTRY OF SCIENCE & TECHNOLOGY  
GOVERNMENT OF INDIA

Before connecting, operating, or adjusting this unit, please read this instruction booklet carefully .

Customer Care : +91 - 124 - 4170561 - 566

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*Dear Customer,*

Congratulations for choosing Su-Kam Pure Sine Wave Home UPS! This Pure Sine Wave Home UPS has been developed using state-of-the-art Micro controller based technology.

Some of the distinguishing features of the Su-Kam Pure Sine Wave Home UPS :

<ul style="list-style-type: none"> <li>❖ Pure Sine Wave output to run all the appliances</li> <li>❖ Built in SMF Batteries</li> <li>❖ Fuzzy logic control- a unique &amp; advanced technology</li> <li>❖ Smart Overload Sense and Short Circuit Protection</li> <li>❖ Smart SMPS based fast battery charger with automatic power factor correction</li> </ul>	<ul style="list-style-type: none"> <li>❖ Optional No Load Shutdown</li> <li>❖ User Friendly Graphical LCD display</li> <li>❖ Very Fast Switch over time, Provides long power back-up for both PC and home appliances</li> <li>❖ Future Expandability possible</li> <li>❖ Automatic Low Battery Cutout</li> </ul>
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This manual will help you to better understand your Pure Sine Wave Home UPS, increase your convenience in using it and maximize its benefits for you.

Feel free to contact our authorized dealer or us at [info@su-kam.com](mailto:info@su-kam.com). You can also visit our website [www.su-kam.com](http://www.su-kam.com) anytime for any clarification or more information. We value your suggestions and comments. Su-Kam is committed to continual product improvement and the best way to accomplish this task is by listening to our valued customers. This commitment gets strengthened every time you buy a Su-Kam product.

We appreciate the support you have shown us through the purchase of our product. Please read this manual to become familiar with its features and various applications.

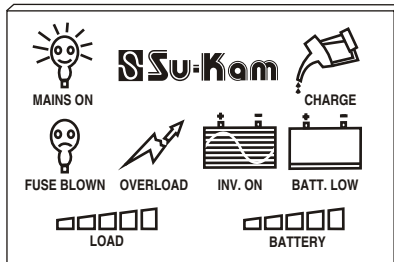
**Regards,  
Su-Kam Power Systems Limited**

## KNOWING YOUR HOME UPS

Now lets begin the journey to explore various aspect of your Su-Kam Pure Sine Wave Home UPS. Welcome aboard!

Su-Kam's Home UPS is a truly futuristic concept. It works as an offline (Stand-by) UPS having options of user selectable mains voltage (narrow / wide window) and switch over time from mains to backup mode or vice-versa. It ensures continuous supply of power from the battery bank whenever mains supply is not available.

### FRONT VIEW:



Graphical LCD Display

On the front panel of the Home UPS there is an ON/OFF power active switch, and a graphical LCD display with following indications:

**MAINS ON** : This graphical symbol, when glows indicates that incoming mains is available.

**INV.ON** : This graphical symbol, when glows indicates that incoming mains is not available and the output is from HOME UPS.

**CHARGE** : This graphical symbol, when glows indicates that the mains line is coming and the charging of batteries is also taking place side by side

**BATTERY** : This graphical symbol indicates the battery charge level. All five levels will glow when the battery is fully charged.

**LOAD** : This graphical symbol indicates the load level connected to the Home UPS.

**FUSE BLOWN/TRIP** : This Graphical Symbol when glows, indicates that the mains fuse blows off or trips when the load connected through the Home UPS exceeds the specified limits. In this case, reduce the extra load and reset the AC Fuse or circuit breaker given at the back to restore the mains line.

**BATT. LOW** : This graphical symbol, when glows indicates that the battery voltage has gone down to the lower limit during discharge. After this indication HOME UPS will shut down automatically after few seconds. During this stage the buzzer gives a continuous beep.

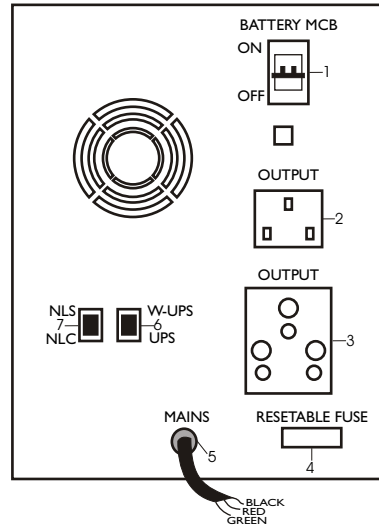
**OVERLOAD/SHORT CIRCUIT** : This graphical symbol, when glows indicates that either Short circuit has occurred or there is Overload on the Home UPS . The Home UPS resets itself automatically and makes 8 attempts in case of overload and 4 attempts in case of short circuit to turn on again, if the overload or short circuit continues even after these attempts, it turns off permanently and will turn on only after ON/OFF power active switch is turned OFF and then turned ON. In the event of unsuccessful attempts it automatically shuts down. During overload or short circuit, graphical symbol lights up and the buzzer gives beep. The beep is intermittent in case of overload and short circuit. If there is short circuit at the output, the HOME UPS will turn off permanently after a few attempts. It can be reset by removing short circuit and then switching off and on the power active switch.

### BACK PANEL:

The Home UPS has a AC Resettable Fuse or circuit breaker, two toggle switches, two output Socket and two pole DC MCB to connect the internal batteries. A three core input cable is used to connect the home UPS to the incoming AC Mains. Ensure that incoming phase (or line) is connected to line (Red wire), neutral is connected to neutral (Black Wire) and earth is connected to earth (Green Wire). After this the output is connected through the output socket at the rear of the Home UPS.

### BACK PANEL VIEW:

1. 40A DC Double Pole Battery MCB for Reverse Battery Protection.
2. 10A D type Output Socket.
3. 16A Output Socket.
4. 16A Resettable Fuse.
5. 3 Core 16A/250V AC Mains Input Lead.
6. Toggle Switch for Narrow Window (UPS) / Wide Window (W-UPS) mode.
7. Toggle Switch for No Load Shutdown (NLS) / No Load Continue (NLC) mode.



**Note :** 1. Position the Toggle Switch(6) at the back panel to Narrow Window (UPS) mode if you want to run PC load otherwise you can place the switch to Wide Window (W-UPS) mode.

2. Position the Toggle switch(7) to No Load Shutdown (NLS) mode if you want to switch off the system in case of no load or load < 3%. Place the switch to No Load Continue (NLC) mode if you want to run the system in case of no load condition or any other load.

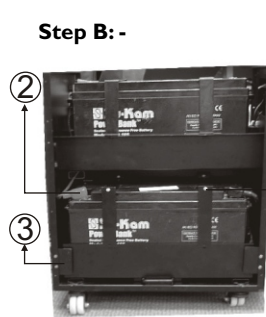
### FOR UNINSTALLING THE BATTERIES

#### Step A:-



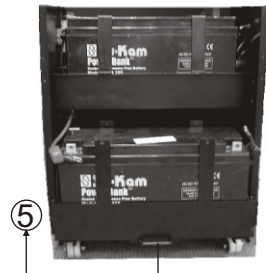
1. Open all screws, remove top & side covers.
2. Open battery terminals of lower battery.
3. Open tray locks & remove it.

#### Step B:-



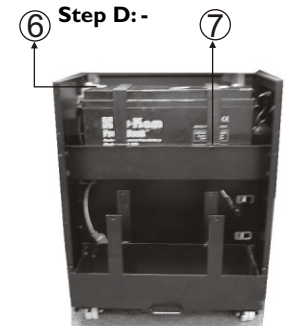
4. Open screws of battery clamps & remove it.
5. Pull the tray slowly & lift lower battery with the help of lifting straps.

#### Step C:-

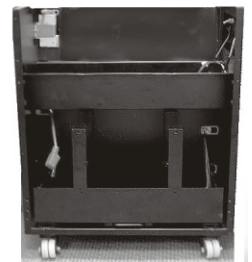


6. Open battery terminals of upper battery.
7. Open screws of battery clamps & remove it.
8. Lift the battery with the help of lifting straps.

#### Step D:-



#### Step E:-



**FOR INSTALLING THE BATTERIES**
**Step A: -**


1. Open all screws remove top & side cover, if already open than start from next step.

**Step B: -**


2. Place upper battery in tray with the help of starps.

**Step C: -**


3. Place the holding clamps of battery and tight screws.

4. Tight battery terminals.

5. Pull the lower battery tray & put the battery in the tray.

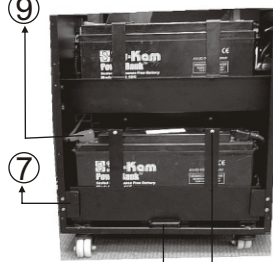
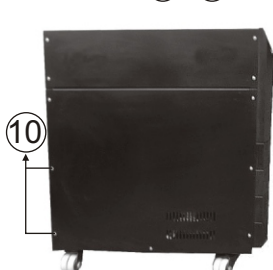
6. Push the tray slowly.

7. Place the tray locks at their position & tight screws of tray locks.

8. Place the battery holding clamps at their position & tight screws of holding clamps.

9. Tight battery terminals.

10. Tight all screws of top & side cover

**Step D: -**

**Step E: -**


Battery  
Installation

(5)

REV. 25-04-08

**IMPORTANT SAFETY INSTRUCTIONS**

*Before proceeding further kindly go through the safety instructions carefully.*

**General Precautions:**

1. Before using the Home UPS read all instructions and cautionary markings on the Home UPS, the Batteries, all appropriate section of this instruction manual.
2. Do not expose Home UPS to rain, liquids of any type. The Home UPS is designed for interiors only. Handle it very carefully while moving Home UPS from one place to another place because it is very heavy (140 Kg) and have internal SMF Batteries.
3. Do not disassemble the Home UPS, take it to a Su-Kam Engineering Service Centre when service or repair is required. Opening by unqualified personnel entails electric shock or fire hazard.
4. To reduce risk of electric shock, disconnect all wiring before cleaning.
5. Provide ventilation to outdoors from the Battery compartment.
6. Do not cover your Home UPS with any cover or cloth.
7. Do not install this Home UPS on or near flammable materials (plywood, Chemicals, gasoline etc.).
8. Be extra cautious when working with metal tools on and around batteries. It could short-circuit the batteries or other electrical parts, producing a spark that could cause an explosion.
9. Remove conductive jewelry such as rings, bracelets, necklaces and watches when working with a battery. A battery can produce a short-circuit current high enough to weld a ring or causing severe burns.

Safety  
Instructions

(6)

REV. 25-04-08

### IMPORTANT PRECAUTIONS:

The output side of the Home UPS AC wiring should never be connected to a generator or incoming utility power. This condition is far worse than a short circuit. If the unit survives this condition, it will shut down until correction is made.

**Note :** Never disconnect the battery cables while the Home UPS is delivering power or battery charger is operating. The Power Active Switch has no effect on the charger; it turns off only the power output during backup mode. To disconnect the batteries for service:

- (a) turn off the power switch.
- (b) disconnect all AC power.
- (c) disconnect all the battery cables.

### Special Notices:

- Do not switch on the heavy load TV, Refrigerators, Motor, Cooler, etc when Home UPS is running on battery backup and is in UPS mode. This may cause rebooting of your computer.
- Avoid connecting the stabilizer between utility power and Home UPS. The AVR of stabilizer may cause your computer to reboot.
- We recommend that you have point to point wiring of the Home UPS.
- **GROUNDING INSTRUCTIONS:** This Home UPS must be connected to a grounded, permanent wiring system.

### TECHNICAL SPECIFICATIONS

<b>MODEL</b>	<b>MATRIX</b>
<b>CAPACITY</b>	<b>1400VA/24V</b>

#### VOLTAGE LIMITS NARROW WINDOW (UPS MODE)

Mains A.C. Low Cut	185 ± 5V
Mains A.C. Low Cut Recovery	190 ± 5V
Mains A.C. High Cut	265 ± 5V
Mains A.C. High Cut Recovery	260 ± 5V

#### VOLTAGE LIMITS WIDE WINDOW (W-UPS MODE)

Mains A.C. Low Cut	105 ± 5V
Mains A.C. Low Cut Recovery	120 ± 5V
Mains A.C. High Cut	285 ± 5V
Mains A.C. High Cut Recovery	275 ± 5V

#### OUTPUT PARAMETER

Mains Output Frequency	Same as Input (45Hz-55Hz)
Output Frequency	50.0 Hz. ± 0.1 Hz
Output Voltage with Full Load	180V/240V ± 10V
Waveform	Sine Wave
Overload	Above 100%
Short Circuit Protection	>250% Load (Few msec)

#### BATTERY CHARGING

SMPS based charger with Automatic Power Factor Correction	
Maximum Charging Current Limit	10.0A ± 1.0 Amp
Charging Boost Voltage	2 X 13.9V ± 0.2V
Charging Float Voltage	2 X 13.6V ± 0.2V
Battery Lower Voltage Limit	2 X 10.0V ± 0.2V
Recommended Battery Capacity	165 AH / 135 AH
Number of Batteries	2

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



<b>MODEL</b>	<b>MATRIX</b>
<b>CAPACITY</b>	<b>1400VA/24V</b>

**TECHNOLOGY**

Microcontroller based state-of-the-art technology using MOSFETs
Fuzzy Logic Control Technology

**ENVIRONMENT**

Storage Temp.	0-50°C
Operating Temp.	0-40°C
Humidity	0-90% Non-condensing

<b>Dimension (W X D X H) in mm</b>	<b>355 X 610 X 670</b>
<b>Weight (Kg)</b>	<b>137 Kg</b>

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

**TROUBLE SHOOTING**

Symptoms	Rectifications
<b>Main Power is coming. Home UPS shows mains fuse blown/Trip on its display panel</b>	Reduce the load and reset the fuse or circuit breaker given at the rear side of the Home UPS.
<b>No Power during backup mode</b>	Check if low battery symbol is glowing, switch OFF the Home UPS by power active switch. Allow the battery to charge before running the Home UPS on battery again.
	Check if overload/short circuit symbol is glowing. Reduce load and reset the Home UPS by Power Active switch. Also Check the reset fuse or circuit breaker given at the back panel
<b>Home UPS does not operate</b>	Check the internal battery connections, DC MCB position and power active switch position.
<b>Home UPS trips frequently at back up mode</b>	Reduce the load and restart the Home UPS through the power active switch.

Symptoms	Problem	Remedy
<b>There is no output power</b>	Low Battery	Check condition of batteries & recharge
	Loose battery connections	Check and clean all connections
	Loose AC output connections, AC Fuse trip	Check all AC output connections & reset the AC Fuse
<b>System shut down after 20 sec, no display</b>	Output of Home UPS is wired back to its own input	Check the proper AC input and output wiring
<b>Low/High AC output voltage</b>	Measuring with the wrong voltmeter	Meter must be a true RMS reading meter
<b>Low surge power</b>	Weak batteries or Loose internal Batteries Connection	Check Batteries & all connections

*Terms and conditions of warranty*

- ★ SU-KAM POWER SYSTEMS LIMITED warrant to the original purchaser provided the product is still in possession of and used by the original purchaser from the date of purchase.
- ★ The warranty stands on all Electronics, Metal parts (except LCD, switches and external body) for Home UPS will be for a period of 24 months & for batteries 12 months from the date of Manufacturing.
- ★ The warranty will be automatically terminate on the expiry of the warranty period, even in case of the Home UPS not being in use in the specified period.
- ★ This warranty is valid only if it is duly signed by the authorized dealer.
- ★ The warranty will be invalidated if defects arising in company's opinion by reasons of accident, abuse, misuse, neglect, improper installation (if not undertaken by the company or its representative), fire, flood, or other act of GOD and any other natural calamities and any other unauthorized repairs done or carried out will have to be borne by the purchaser. The problem of fuse blown will not be included in the warranty of the product. The services given for the same will be paid service.
- ★ The company is in no way are will be held liable for any loss or injury or damage caused to life or property or death and disability caused to any form of life for any reason whatsoever.
- ★ The warranty will not apply if the original seals are found broken or tampered with.
- ★ Free service under the terms of warranty will be provided only by authorized representatives/dealers of the company anywhere in India.
- ★ The company expressly denies the right of any person to incur or assure for it any other liability or obligation in connection with the sale of Home UPS.
- ★ Claims if any, to this warranty shall be made only before courts having jurisdiction in New Delhi.
- ★ Please send your query or Complaint to [info@su-kam.com](mailto:info@su-kam.com)

WARRANTY CARD

Model No. :-----  
 Serial No. :-----  
 Name of Purchaser :-----  
 Address :-----  
 Date of Purchase :-----  
 Dealer's Name :-----

