

USER'S MANUAL (IFU)

HIGH FREQUENCY PURE SINE WAVE INVERTER
2.5KVA/3.5KVA

SSU-Kom

Salient features

- ◆ Digital Signal controller (DSC) based technology using IGBTs
- ◆ SMPS Battery Charger
- ◆ Smart overload sense and short circuit protection
- ◆ Automatic low battery cutout
- ◆ Low charger ripple voltage to enhance battery life
- ◆ Great power saving
- ◆ LCD Display
- ◆ Light weight with sleek aesthetic looks
- ◆ Pure Sine Wave output to run all appliances satisfactory

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 .

Dear Customer,

We feel immense pleasure while introducing Su-Kam High Frequency Pure Sine Wave Inverter designed and developed using state-of-the-art Digital Signal Controller based technology using IGBTs.

The distinguishing features of the Su-Kam High Frequency Pure Sine Wave Inverter are:

- | | |
|--|---|
| ◆ Pure Sine Wave output to run all the appliances | ◆ Pure DC current SMPS charger increases 50% battery life |
| ◆ High Frequency operation hence light weight with aesthetic looks | ◆ Peak Power output 3 times |
| ◆ Smart Overload Sense and Short Circuit Protection | ◆ User Friendly LCD display (Messages and Faults) |
| ◆ Automatic Low Battery Cutout | ◆ Future Expandability possible |
| ◆ Lesser water topping required | ◆ Lesser components so higher reliability |

This manual will help you to better understand your Pure Sine Wave Inverter, 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 or visit our website 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 feel the best way to accomplish this task by listening 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

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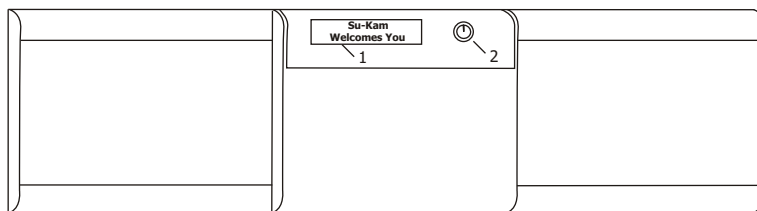
KNOWING YOUR INVERTER

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

In its most basic form, an Inverter transforms Direct Current (DC) to Alternating Current (AC).The battery bank with the Inverter acts as a reservoir to ensure continuous supply of power whenever mains supply from utility power is not available.

FRONT PANEL:

Front panel view 2500VA/3500VA





1. LCD (Liquid Crystal Display)

2. Power Active Switch

MESSAGES ON LCD DISPLAY IN CHARGING AND INVERTER MODES:

- | | | |
|----|--------------------------------|---|
| 1. | *** Su-Kam ***
Welcomes you | This Message begins the journey to explore various aspects of your Su-Kam Inverter. |
| 2. | ---VA /--V
Inverter | This Message indicates the apparent power and input DC voltage of Inverter. |
| 3. | S/W VER -----
H/W VER ----- | This Message indicates the Software and hardware versions of Inverter. |

- | | | |
|-----|---|--|
| 4. | Self testing in
Progress..... | This Message indicates that the Inverter will test all required I/P parameters itself. |
| 5. | Mains ON
I/P Voltage 220V | This Message indicates that the system is in normal mains AC mode incoming mains input voltage will be displayed with accuracy of +/- 5V of actual voltage. |
| 6. | Battery Charging
 | This Message indicates that the system is in normal mains AC mode and battery charging is continue. |
| 7. | Battery Charged
 | This Message indicates that the system is in normal mains AC mode and battery will be in fully charged condition. The charger remain in trickle charging mode. |
| 8. | Inverter ON
Mains fail/Low/High | This Message indicates that the system is in Inverter mode. Mains input status will be shown by the condition mains fail or mains low or mains high. |
| 9. | Load Level 090%
Batt. Level 060% | This Message indicates the output load level and battery level percentage in Inverter mode. |
| 10. | Overloading
Plz Reduce Load | This Message indicates that the inverter is in overload condition (load>100%). Reduce some load to run the Inverter in normal condition. |

- | | | |
|-----|----------|--|
| 11. | Overload | This Message indicates that the inverter has made 8 attempts to turn ON again and the Overload continued even after that. The Inverter turns OFF permanently and will turn ON only after ON/OFF power switch is turned OFF and then ON. This message is displayed after the buzzer gives intermittent beeps. User may again get backup by reducing some O/P load and restarting the Inverter by ON/OFF switch again. |
| | Shutdown | |
-
- | | | |
|-----|----------------|--|
| 12. | Short Circuit | Check Inverter wiring and O/P load properly to run the Inverter in normal condition. |
| | Plz Check Load | |
-
- | | | |
|-----|---------------|---|
| 13. | Short Circuit | This Message indicates that the inverter has made 4 attempts to turn ON again and the Short circuit continued even after that. The Inverter turns OFF permanently and will turn ON only after ON/OFF power switch is turned OFF and then ON. This message is displayed after the buzzer gives intermittent beeps. |
| | Shutdown | |
-
- | | | |
|-----|-----------------|---|
| 14. | Battery Low | This message indicates that the battery has reached in low cut condition. User may get some backup by reducing some O/P load. |
| | Plz reduce Load | |
-
- | | | |
|-----|-------------|---|
| 15. | Battery Low | This Message indicates that the inverter has made 2 attempts to turn ON again and the Battery low condition continued even after that. The Inverter turns OFF permanently and will turn ON only after ON/OFF power switch is turned OFF and then ON. This message is displayed after the buzzer gives continuous beeps. |
| | Shutdown | |
-
- | | | |
|-----|---------------------|--|
| 16. | Mains Fail/Low/High | This Message indicates the status of Inverter front switch together with mains input condition, mains fail or mains low or mains high. |
| | Inverter OFF | |

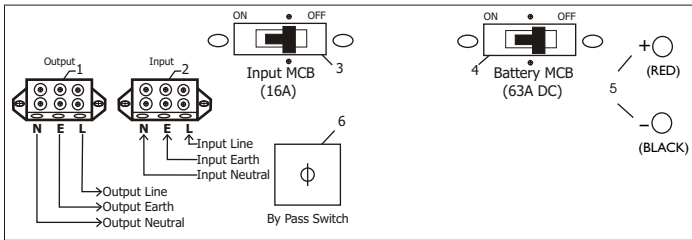
BACK PANEL:

The Inverter has two battery wires coming out from the rear side, two MCB and two block terminals (one each for input and output). We connect the two battery wires to the terminals of the battery, the red colored to positive terminal and the black colored to the negative. A three way terminal block is used to connect the Inverter to incoming AC Mains. Ensure that the Incoming Phase, Neutral and Earth wires should be connected to L, N and E points respectively of input terminal block. After this the output is connected through the other three way output terminal block, again L, N and E sequence should be maintained.

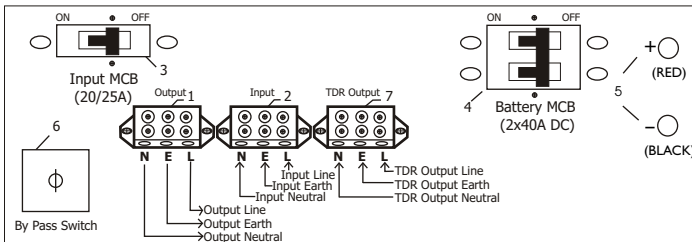
Note: Do not connect Input and Output neutral together during installation.

REAR VIEW:

Back panel view 2500VA



Back panel view 3500VA



- | | |
|--------------------------|---|
| 1. Output Terminal Block | 5. Battery Input Wires |
| 2. Input Terminal Block | 6. Manual Mains By Pass Switch (optional) |
| 3. Input MCB | 7. TDR Output Terminal Block |
| 4. Battery MCB | |



IMPORTANT SAFETY INSTRUCTIONS

Before proceeding further kindly go through the safety instructions carefully.

General Precautions:

1. Before using the Inverter read all instructions and cautionary markings on the Inverter, the Batteries, all appropriate section of this instruction manual.
2. Do not expose Inverter to rain, liquids of any type. The Inverter is designed for interiors only.
3. Do not disassemble the Inverter, 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. Warning-Risk of Explosive gases

WORKING IN THE VICINITY OF A LEAD ACID BATTERY MAY BE DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION.

Provide ventilation to outdoors from the Battery compartment.

The battery enclosures should be designed to prevent accumulation and concentration of hydrogen gas in “pockets” at the top of the compartment. Vent the battery compartment from the highest point. A sloped lid can also be used to direct the flow to the vent opening location. To reduce the risk of battery explosion, follow all the instructions of batteries supplier or any equipment you intend to use in the vicinity of batteries.

6. Do not cover your Inverter with any cover or cloth.
7. Do not install this Inverter 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.

IMPORTANT PRECAUTIONS:

1. The output side of the Inverter 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.
2. It is recommended to have point to point wiring of the inverter.
3. **GROUNDING INSTRUCTIONS:** This Inverter must be connected to a grounded permanent wiring system.
4. Do not connect Input and Output neutral together in any case during installation.

Note : Never disconnect the battery cables while the Inverter 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.

TROUBLE SHOOTING

Symptoms	Rectifications
Mains power is coming but unit is operating in inverter mode	Check Input MCB, if it is tripped off turn it into ON state and if still the problem persists contact authorised Su-Kam service engineer
No power during backup mode	(1) Check display if low battery condition is present. Remove all load and switch OFF/ON the power switch. Allow the battery to charge when the mains is resumed before running the inverter on battery again
	(2) Check display if overload/short circuit condition is present. Reduce load and ON/OFF power switch
Inverter does not operate	Check the battery connections and the mains connections
Inverter trips frequently at backup mode	Reduce the load and reset the inverter

Symptoms	Problem	Remedy
There is no output power	(1) Low Battery.	Check condition of batteries and recharge.
	(2) Loose or corroded batt. Connections.	Check and clean all connections.
	(3) Loose AC output connection.	Check all AC output connections.
Inverter shuts down after 20 seconds no display at all	Output of Inverter is wired back to its own input.	Check for proper AC input and output wiring.
Low/High AC output	Measuring with the wrong type Voltmeter.	Meter must be a true RMS reading meter.
Low surge power	Weak batteries, battery cable too long.	Refer to cable and battery recommendations in this manual.
Unit overheats	Internal cooling fan is not working	Contact authorised Su-Kam service engineer

TECHNICAL SPECIFICATIONS

MODEL	HIGH FREQUENCY SINE WAVE INVERTER	
CAPACITY	2500VA/48V	3500VA/48V

VOLTAGE LIMITS

Mains A.C. Low cut	135 ± 5V
Mains A.C. Low cut Recovery	145 ± 5V
Mains A.C. High cut	285 ± 5V
Mains A.C. High cut Recovery	275 ± 5V

OUTPUT PARAMETER

Mains Output Frequency	Same as Input
Inverter Mode Output Frequency	50.0 Hz. ± 0.1 Hz
Inverter Mode Wave form	Sine Wave
Overload	Above 110%
Short Circuit protection	>300% Load (Few msec)

BATTERY CHARGING

SMPS Based Charger with Pure DC Current Charging	
Maximum Charging Current Limit	9.0 ± 1.0 Amp
Charging Float/Boost Voltage	55.0V ± 0.4V
Battery Lower Voltage Limit	42.0V ± 0.4V
Recommended Battery capacity	100AH-165AH, 12Vx4
Number of Batteries	4

TECHNOLOGY

Digital Signal Controller based state-of-the-art technology using highly reliable IGBTs	
SMPS Based Pure DC charger	

ENVIRONMENT

Storage Temperature	0-50°C
Operating Temperature	0-40°C
Humidity	0-90% Non-Condensing

Dimension (W x D x H) in mm	530x410x140	
Weight (Kg)	14.7Kg	15.2Kg

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 parts (except LCD, switches and external body) for Inverter will be for a period of 24 months.
- ★ The warranty will be automatically terminate on the expiry of the warranty period, even in case of the Inverter 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 Inverter.
- ★ 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

WARRANTY CARD

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

DEALER STAMP

SU-KAM OFFICES ADDRESSES

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