

USER MANUAL



PURE SINE WAVE INVERTER

Dear Valued Customer,

We congratulate you for your excellent choice of our SF POWERSMART. will provide you complete comfort during the absence of utility power and provide your appliances the exact replication of mains supply because of the latest Technology.

The salient features of SF POWERSMART HOME UPS are:

- Pure Sine Wave Home UPS
- Wide Mains Voltage Range for Battery Charging i.e. 90V -300V
- 8 AMP Charging Current at 120V Mains Input
- Automatic Battery Charging Management Module
- Great Power Saving
- LED Display
- Easy Handling (Compact In Size)
- In Built Protection (Short Circuit, Overload, Battery Low & Over Charge, Over Temperature Reverse Phase)
- Dual Mode of Charging i.e. Normal & High Charging Rates through Touch Switch
- Advance Surface Mounting Technology
- Easy to Service

This manual provides you thorough understanding of your Home UPS and its optimum use.

Please read installation and operating instructions in the manual carefully. Before installing and using your SF POWERSMART. Pay special attention to the **CAUTION** and **WARNING** statements in this manual.

About the Home UPS

SF POWERSMART HOME UPS transforms Direct Current (DC) to Alternating Current (AC). The battery acts as a reservoir ensuring continuous supply when utility power is not available.

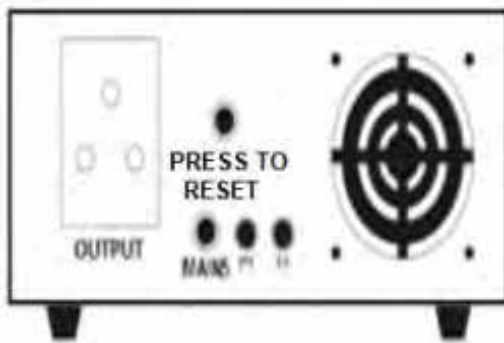
Front Panel

There is On/OFF Switch and graphical display the indications.

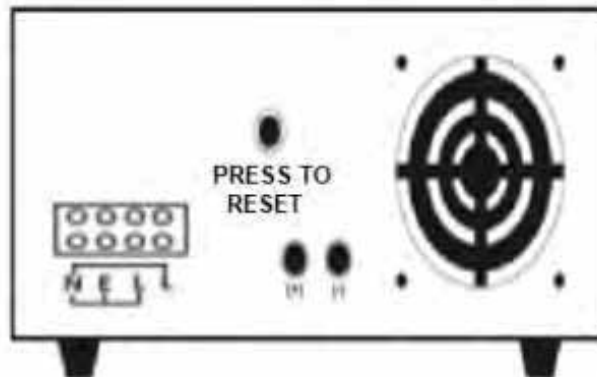
Graphic Description	Status	Meaning
MAINS ON	Continuously Glow	Mains Supply Present
	Blinking with beep sound	Mains fuse blown
	Blinking without beep sound	Mains fuse blown and UPS Switched off
UPS ON	Continuous Glow	Back-up ON
BATTERY LOW	Continuous glow with beep sound	Battery Low Alarm
	Continuous glow without beep sound	Battery Low Cut
CHARGING/ CHARGED	Blinking	Battery Charging
	Continuous Glow	Battery Charged
OVERLOAD/ SHORT CIRCUIT	Blinking with beep sound	Overload Alarm
	Blinking without beep sound	Overload Shutdown
	Continuous glow with beep sound	Short Circuit

Back Panel

SF POWERSMART Home UPS has two battery wires coming out from the rear panel of Inverter, A Resettable Switch, An Output Socket/ Terminal Block and a Power Cord / Terminal Block for Mains input Supply.



SiNE PRO AL 700/ 900/ 1200/ 1500



SiNE PRO AL 2200

Some Safety Measures

Important Precautions

The output side of the Home UPS AC wiring of SF POWERSMART should never be connected to public power or a DG set. This condition is far worse than a short circuit. If the unit survives this condition, it will shut down until connections are made.

Installation should ensure that the Home UPS AC output of SF POWERSMART should not be connected to AC input.

Note: Connecting the battery cables to the SF POWERSMART battery terminals may cause spark, usually accompanied by a “snap”. This is normal, don’t let it scare you.

Never disconnect battery cables while the SF POWERSMART is delivering power or battery charger is operating. Always turn the switch off first.

General Precautions

- Before installing, connecting any wiring or using the SF POWERSMART, read all instructions of this instruction manual.
- **CAUTION:** Do not install or connect batteries to this unit unless instructed to do so. Failure to comply with this instruction can cause damage or complete failure of the unit.
- **CAUTION:** To reduce risk of injury, use only deep-cycle lead acid batteries.
- Do not expose the system to rain, snow or liquids of any type. Do not disassemble the system; call SF POWERSMART authorised service centre when service or repair is required. In correct reassembly may result in a risk of electric shock or fire.
- To reduce risk of electric shock, disconnect all the wiring from the system before attempting any maintenance cleaning. Turning off the system will not reduce this risk
- **WARNING:** WORKING IN VICINITY OF A LEAD ACID BATTERY IS DANGEROUS.
- Be extra cautious when working with metal tools on, or around batteries. The potential exists to drop a tool and short-circuit the batteries or other electrical parts resulting in sparks that could cause an explosion
- Do not leave batteries in discharge state for more than a day or two. They will undergo a chemical process called sulfation which can permanently damage the battery. Also batteries will self-discharge over a period of 3-6 months, so they should periodically recharge even if they are not being used.
- **GROUNDING INSTRUCTIONS:** The SF POWERSMART should be connected to a grounded, permanent wiring system.

Charging Topology

BATTERY LEVEL AUTO SENSE CHARGING:

Boost Level Charging: Batteries are charged at maximum allowed continuous charging current till it achieves the battery boost voltage level which is 14.4V for 700/900/1200 & 28.8V for 1500/2200 or up to the automatic battery level set by control unit itself. The control unit checks the battery level at specified interval of time. When the level stops increasing it looks that battery as level as a Boost level and maintains this for the four months. It recycles the same process of battery level sensing in four-month cycle.

Trickle Level Charging: To maintain the float level, the charger uses zero current at 13.7 V for 700/900/1200/& 27.4 for 1500/2200 for some times and follow again with pulse charging of <1AMP current at same voltage. This keeps the battery in full charge condition even when not in use.

Selector Switch: The selector switch is provided to select the charging current i.e., High charging (HC) & Normal Charging (NC)

MODEL					
PARAMETERS	SINE PRO AL 700	SINE PRO AL 900	SINE PRO AL 1200	SINE PRO AL 1500	SINE PRO AL 2200
VA rating	650 VA	900 VA	1050 VA	1450 VA	2000
Nominal Battery Voltage	12V	12V	12V	24V	24V
High Charging Current (HC)	15A ± 1A	17A ± 1A	18A ± 1A	17A ± 1A	20A ± 1A
Normal Charging Current (NC)	11A ± 1A	12A ± 1A	13A ± 1A	12A ± 1A	14A ± 1A
Battery Boost Voltage	14.4 V ± 0.2 V			28.8 V ± 0.4 V	
Battery Float Voltage	13.7 V ± 0.2 V			27.4 V ± 0.4 V	
Output Voltage at No Load	220V ± 7V				
Output Frequency	50 Hz ± 1 Hz				
Output Wave form	Pure Sine Wave				
Battery Low Cut OFF	10.5V ± 0.2V DC			21V ± 0.4V DC	
Change over time (Mains to Back-up) at Normal mode	≤ 40 msec				
Change over time (Back-up to Mains) at Normal mode	≤ 10 msec				
Input Voltage Range (@Normal mode)	90 V - 300V +/- 10V AC				

LOAD CHART SF POWERSMART*																				
Model	SiNE PRO AL 700				SiNE PRO AL 900				SiNE PRO AL 1200				SiNE PRO AL 1500				SiNE PRO AL 2200			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Options																				
Computers (TFT)	-	-	-	1	-	-	-	1	-	-	-	2	-	-	-	3	-	-	-	4
Printer (Laser)	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1
TV (LCD 26")	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	2
Tube light (40W)	3	-	2	1	4	-	3	1	4	-	3	1	8	-	6	2	11	-	7	3
Fan (80W)	3	-	3	2	4	-	3	3	5	-	4	3	8	-	6	4	12	-	7	5
CFL (15W)	4	28	5	3	4	37	5	5	5	42	5	5	4	62	9	5	6	80	9	7

* Depending on the actual VA rating/technical specifications of the appliance. Specifications are subject to change without prior notice due to constant R&D effort. Accessories shown in the picture are not the standard part of the product.

Installation

Where to install

The system should be installed in a location that meets the following requirements:

- a) **Dry** – Do not allow water to drip or splash on the SF POWERSMART
- b) **Cool** – The ambient air temperature around the system should be between 0°C to 45°C (32°F to 113°F). Cooler environment is better for the system.
- c) **Ventilation:** Allow at least two inches (5cm) of clearance around the system for air flow.
- d) **Safe:** DO not install the SF POWERSMART in the same compartment as batteries or in any compartment which are storing flammable liquids such as gasoline.
- e) **Close to battery** - Install the system as close to the battery as possible in order to minimise the length of cable required to connect the system to the battery. It is better and cheaper to run longer AC wires than longer DC cables.

CAUTIONS! To prevent fire, do not cover or obstruct ventilation openings. Do not install the system in a zero - clearance compartment. Overheating may result.

WARNING! This equipment contains components which tend to produce arcs or sparks. To prevent fire or explosion do not install in compartment containing batteries or flammable materials or in locations which require ignition protected equipment.

How To Install

DC Cabling :

1. Ensure that the ON/OFF switch on the front panel of the Inverter is in OFF position before you begin the installation.
2. Connect the negative terminal of the battery to the thick black wire of system
3. Connect the positive terminal of the battery to the thick red wire of system

AC Cabling:

Plug in the power cord to the mains socket on the wall. The cabling should have proper earthing. Connect AC input supply to the 3 way terminal of the system such that the line is connected to 'L', neutral is connected to 'N' and earth is connected to 'E'. Input supply should remain ON once the system is installed. Take out from output socket.

Start Operation

Once the AC and DC wiring have been installed and connected, take a moment to go re-examine all the connections and make sure they are secured and in the proper terminals.

1. Check to see that the SF POWERSMART is turned off and then apply battery (DC) power to it. Ensure that all wiring has been installed properly. Next turn on the battery bank DC disconnects or connect the proper fuse in line to the battery to complete the battery circuit.
2. Put ON/OFF switch to the ON position. This system should run a load without AC input (battery only). Place a load on the system and make sure it works.
3. To charge your batteries connect AC power to the system by plugging in the AC power and turning on the mains line. This shows that charger is working properly. Any AC load powered by the system should also work at this point since a portion of the AC power is passed through this SF POWERSMART to power the loads.
4. Disconnect the AC power the system should transfer to battery mode immediately. This will be indicated by clicking sound as the internal transfer relay changes position. The system will begin to take power from the batteries and use it to power the load. And the load continues to operate uninterrupted.

The above steps will complete the functional test of the SF POWERSMART. If all areas pass, the system is ready for use. If something fails figure out the reason before proceeding or contact the service centre.

Maintenance

Very little maintenance is required to keep your SF POWERSMART operating properly. You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt

Troubleshooting Guide

Problems and Symptoms	Possible Cause	Solution
No Output voltage No Indicator on	Poor battery condition or battery connection loose	Use new battery or make proper connections
No output voltage Overload indicator ON.	Overload or short circuit	Disconnect the excessive load or check the house wiring
Mains indicator blinks with buzzer beep	Mains fuse is blown	Call the service support. There is overheat problem in the system
Battery Mode but no power	Battery Low/Overload/Short Circuit	Replace the mains fuse at back panel and Reduce the load connected to system, Beep sound will stop when switch is in OFF condition
Battery mode but no power	Battery Low / Overload / Short Circuit	Check display if low battery condition is present. Remove all Loads and press ON/OFF power switch. Allow the battery to charge when the mains is resumed before running the system on the battery again. Check display if overload/short circuit condition is present. Reduce load and press ON/OFF power switch.
Low surge power	Weak Batteries battery cables too long	Refer to cable and battery recommendations in this manual

Specifications*

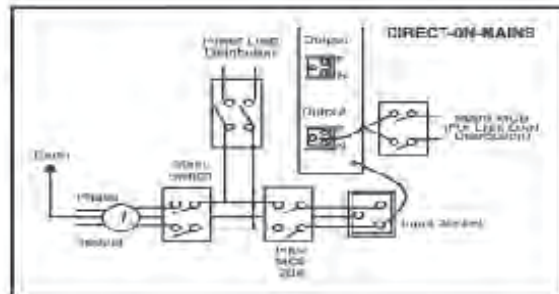
Technical Specifications*

APPLICATIONS* :

Back-up Power for all electrical Loads:

- Computers and Printers
- Fans & Tube Lights
- T.V. Sets, DVD & Music System

*Ideal for your Computers & Printers



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