USER MANUAL

CHADHA POWER

PURE SINE WAVE

INVERTERZ star

Dear Valued Customer,

We congratulate you for your excellent choice of our CHADHA POWER STAR INVERTER/UPS. Chadha Power STAR Series of Pure Sine Wave Inverters will provide you complete comfort during the absence of utility power and provide your appliances the exact replication of mains supply.

The salient features of CHADHA POWER STAR SERIES of Inverters are:

- Pure Sine Wave Output Wave Shape
- Automatic Battery Charge Management
- Dual Mode of Charging i.e. Normal & High Charging Rates
- LED Indications for better user interface
- Automatic Overload, Battery Low, Over Temperature & Short Circuit protection sense
- Wide Mains Voltage Charging Range i.e. 90V - 300V
- Mains Low Voltage Charging Facility
- Reverse Phase Protection
- Great Power Saving
- Easy to Service
- No Humming Noise

This manual provides you with a thorough understanding of your Chadha Power STAR INVERTER and its optimum use.

Please read the installation and operating instructions in the manual carefully before installing and using your Chadha Power STAR Inverter. Pay special attention to the **CAUTION** and **WARNING** statements in this manual.

About the CHADHA POWER STAR Series of Inverters

Chadha Power Star Series of Pure Sine Wave Inverters transforms Direct Current (DC) to Alternating Current (AC). The battery acts as a reservoir ensuring continuous supply when utility power is not available.

Controls

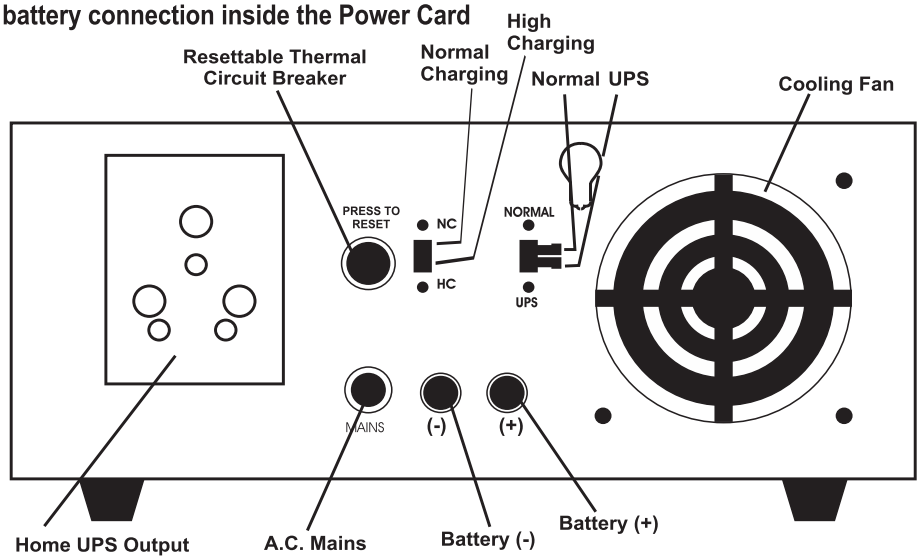
Front Panel

Graphic Description	Indication	Meaning
MAINS ON	Continuous Glow	Mains Present
	Blinking with beep sound	Resettable Thermal Circuit Breaker Trip
UPS ON	Continuous Glow	Back-up ON
BATTERY LOW	Continuous glow with beep sound	Battery Voltage Low
	Continuous glow without beep sound	Battery Voltage Low Cut
CHARGING/ CHARGED	Blinking	Battery Charging
	Continuous Glow	Battery Charged
OVERLOAD/ SHORT CIRCUIT	Blinking with beep sound	Overload Alarm
	Blinking without beep sound	Shutdown
	Continuous glow with beep sound	Short Circuit

Rear Panel

Chadha Power Star Inverters have two battery wires coming out from the rear side, a Resettable Thermal Circuit Breaker 7/10Amp (7Amp - 650/850/1050 VA & 10Amp -1450 VA), output socket and a power cord to connect with mains supply. Red coloured battery wire is to be connected to positive terminal of battery and black coloured wire to be connected to negative terminal of the battery.

Caution: Do not reverse the battery connections, it will blow the DC fuse connected in series with battery connection inside the Power Card



Some Safety Measures

Important Precautions

The output side of the AC wiring of Chadha Power Inverterz should never be connected to utility 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 AC output of Chadha Power Inverterz should not be connected to AC input.

Note: While connecting the battery cables to the Chadha Power Inverterz, there may be sparks on the battery terminals, usually accompanied by a "snap". This is normal, don't let it scare you.

Never disconnect battery cables while the Chadha Power Inverterz is delivering power or battery charger is operating. Always turn the switch off first.

General Precautions

- Before installing, connecting any wiring or using the Chadha Power Inverterz, read all instructions of this instruction manual.
- Do not expose the system to rain, snow or liquids of any type. Do not disassemble the system; call Chadha Power authorised service centre when service or repair is required. Incorrect 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 discharged 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 time, so they should periodically be recharged even if they are not being used.
- **GROUNDING INSTRUCTIONS:** The Chadha Power Inverterz Sine Wave should be connected to a grounded, permanent wiring system.

Personal Precautions

- Someone should be in your audible range to come to your aid when you work near batteries
- Have plenty of fresh water nearby in case battery acid contacts skin, clothing or eyes
- Wear complete eye protection and clothing protection. Avoid touching eyes while working near batteries. Wash hands when done.
- If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eyes, immediately flood eyes with running cool water for at least 15minutes and get medical attention immediately.
- Never attempt to charge a frozen battery.
- Before touching battery terminals make sure that the system is OFF and AC mains to the CHADHA POWER Inverter is also OFF.
- NEVER smoke or allow spark or flame in vicinity of the batteries.
- Remove personal metal items such as rings, bracelets, necklaces and watches when working with an electrical circuit. These items can cause a short circuit current high enough to weld a ring and may cause severe burns
- If it is necessary to remove any battery, always remove the grounded terminal from the battery first. Make sure all the accessories are off, so as not to cause arcing. Be sure that the area around the battery is well ventilated.
- Clean battery terminals. Be careful not to allow corrosion to come in contact with eyes.
- Study all battery manufacturers' specific precautions and recommended rate of charge.
- Add only distilled water in each cell until battery acid reaches level specified by the battery manufacturer. This helps purge excess gas from cells. Do not over fill. For a battery without caps, carefully follow manufacturer's charging instructions.
- **CAUTION: The Chadha Power Inverterz Pure Sine Wave should be connected to grounded, permanent wire system.**

SPECIAL NOTICES:

i. The Chadha Power Star Inverterz are for use with a nominal supply voltage of 12V/ 24V DC.
ii. No AC or DC disconnects are provided as an integral part of this system.
iii. No over current protection for the battery supply is provided as an integral part of this system. Both AC & DC disconnects must be provided as part of the system installation.
vi. No over current protection for the AC output wiring is provided as an integral part of the system. Over current protection of the AC output wiring shall be provided as part of the system installation.

Charging and Load Chart

CHARGING MODE

Parameter	Model with Rating			
	STAR 12V 650VA	STAR 12V 850VA	STAR 12V 1050VA	STAR 24V 1450VA
High Charging Current	15A±1A	17A±1A	18A±1A	17A±1A
Normal Charging Current	11A±1A	12A±1A	13A±1A	12A±1A
Battery Boost Voltage	14.4V ± 0.2V			28.8V ± 0.4V
Battery Float Voltage	13.7V ± 0.2V			27.4V ± 0.4V
Charging Technique	Automatic sense Intelligent Control (ASIC)			

LOAD CHART CHADHA POWER INVERTERZ*

Model	650VA				850VA				1050VA				1450VA			
Options	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Computers (TFT)	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	3
Printer (Laser)	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
TV (LCD 26")	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Tube light (40W)	3	0	2	1	4	0	3	1	4	0	3	1	8	0	6	2
Fan (80W)	3	0	3	2	4	0	3	3	5	0	4	3	8	0	6	4
CFL (15W)	4	28	5	3	4	37	5	5	5	42	5	5	4	62	9	5

* 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.

APPLICATION CHART CHADHA POWER INVERTERZ*

Back-up Power of all electrical loads:

- Computer & Printers
- Fan, Tubelights, CFL, LED Lights
- T.V. Sets, DVD & Music System

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 Chadha Power Inverterz

b) **Cool –** The ambient air temperature around the system should be between 0^0C to 45^0C (32^0F to 113^0F). 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 Chadha Power Inverterz in the same compartment as batteries or in any compartment which is 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.

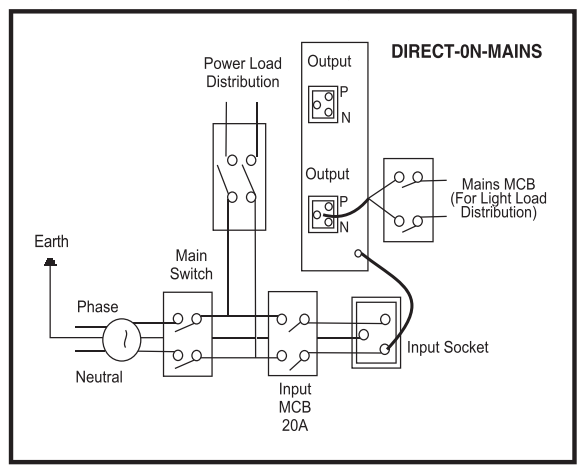
How To Install

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. Input supply should remain ON once the system is installed. Take output from output socket.

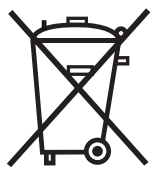


Start Operation

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 Chadha Power Inverter 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 compete 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 Chadha Power Inverter 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.
5. 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 Chadha Power Inverter. If all areas pass, the system is ready for use. If something fails, figure out the reason before proceeding or contact the service centre.



DO NOT MIX WITH OTHER WASTES FOR DISPOSAL

To prevent possible harm to the environment or human health this product should not be disposed with other waste. Household users should contact either their retail seller or local government office for safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract for proper disposal.

Maintenance

Very little maintenance is required to keep your Chadha Power Star Inverter 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	Solutions
No Output voltage No Indication	Poor battery condition or battery connection loose	Use new battery or make proper connections
No output voltage Overload indication	Excess Load Applied	Reduce the excessive load from the Chadha Power Inverterz & reset by ON/OFF Switch
No output voltage All LED Blinking	Thermal shut down	Call the service support. There is overheat problem in the system
Mains ON LED Blinking while Mains Voltage is available	Resettable Thermal Circuit Breaker open	Press to Reset the Resettable Thermal Circuit Breaker
Mains ON but Not Charging	UPS/ Normal Selection switch may be in UPS mode	Check Mains voltage & Selection of Normal / UPS mode as per specified voltage range

Technical Specifications

Parameter	Model with Rating			
	STAR 12V 650VA	STAR 12V 850VA	STAR 12V 1050VA	STAR 24V 1450VA
No Load Output Voltage	220V ± 7V			
Output Frequency	50Hz ± 1Hz			
Output Wave Form	Pure Sine Wave			
Nominal Battery Voltage	12V			24V
Battery Low Cut Off	10.5V ± 0.2V			21.0V ± 0.4V
Mains Input Voltage Range (at Normal Mode)	90V - 300V ± 10V			
Mains Input Voltage Range (at UPS Mode)	180V - 270V ± 10V			
Changeover Time - Mains to Back-up (UPS Mode)	≤ 10 msec			
Changeover Time - Back-up to Mains (UPS Mode)	≤ 10 msec			
Changeover Time - Mains to Back-up (Normal Mode)	≤ 40 msec			
Changeover Time - Back-up to Mains (Normal Mode)	≤ 10 msec			

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