



# 1000W & 1500W MODIFIED SINE WAVE POWER INVERTER WITH REMOTE

Model: HI-1000 & HI-1500

## INSTRUCTION MANUAL



HI-1000



HI-1500

IF THIS PRODUCT IS USED IN A VEHICLE, THE USER MUST FOLLOW THE INSTRUCTIONS PROVIDED BY THE VEHICLE BATTERY MANUFACTURER BEFORE USE. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY AND / OR PROPERTY DAMAGE



## GENERAL PRODUCT SAFETY PRECAUTIONS

Ensure this instruction manual is read fully and understood, prior to using the power inverter, paying particular attention to the below **SAFETY / WARNING FOR PERSONS** section. Failure to do so, may result in personal injury or property damage.

### RETAIN THIS USER MANUAL FOR FUTURE REFERENCE

- Ridge Ryder inverters are designed for indoor use only and are not water resistant or waterproof. Do not expose the inverter to water or liquids.
- To reduce risk of hazard, do not cover or obstruct the ventilation openings on the front or back of the inverter. Ensure ventilation is adequate and any vent holes in the battery or inverter are not blocked or obstructed.
- Do not install the inverter in a zero-clearance compartment. Overheating may result causing the thermal protection to shut the unit down until a safe temperature is reached. To avoid a risk of fire and electric shock, make sure that existing wiring is in good electrical condition; and that wire size is not undersized (See suggested minimum cable size below). Do not operate the inverter with damaged or substandard wiring.
- This equipment contains components which can produce arcs or sparks. To prevent fire or explosion do not install in sealed compartments containing batteries or flammable materials or in locations which require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks; joints, fittings, or other connection between components of the fuel system.

## SAFETY / WARNING FOR PERSONS

To avoid any personal injury please read the safety instructions below.

- This Inverter is not to be used by persons (including children) with reduced physical, sensory, or mental capacities, or lack of experience and knowledge, unless they have been given supervision or instruction)
- Children being supervised are NOT to play with this appliance.
- Always wear the appropriate Personal Protective Equipment (PPE) when working near batteries. This includes gloves and eye protection.
- Do not use naked flame near a battery. Batteries generate explosive gasses during the charging process that may explode.
- Never smoke or light cigarettes near a battery.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery.  
A lead-acid battery produces a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- Do not place tools on top of a battery or allow tools to fall onto a battery.
- Ensure a well ventilated area is used when installing this inverter near batteries.
- These inverters do not contain serviceable parts. To avoid a hazard ensure that any damage to the unit, cable or plugs are replaced by the manufacturer or service agent/qualified technician.
- Do not disassemble the inverter. The warranty will be void if this instruction is ignored.
- For use with 12v automotive battery types only. Not suitable for 24v batteries or 24v electrical systems.



## INTRODUCTION

Ridge Ryder Modified Sine Wave Power Inverters are designed to power a wide range of 230/240V household appliances efficiently and reliably from a 12V automotive power source. Correct installation is imperative to get the best performance from your inverter.

**IMPORTANT:** When using a power inverter, it is important to remember that the inverter is drawing power from the battery and the battery levels should be monitored. A second, or separate battery to a vehicles main battery is ideal as well as a means of charging the battery such as a generator or solar system.

If you are running an inverter from your main vehicle starting battery, the vehicle should be run during operation to maintain charge to the battery to prevent a flat battery and a stranded vehicle.

**Power inverters running at full load will quickly deplete even the largest automotive batteries.** Please consider the maximum load and running time of the appliance and how you are planning on recharging the battery before installing and using this inverter.

### Connection to Lithium Batteries

Using lithium chemistry batteries as a power source to run inverters have additional considerations for hassle free operation. Most lithium batteries will have inbuilt battery management systems (BMS) to regulate and protect input and output power. If a lithium battery is overloaded or run flat, the BMS system may engage to shut down the battery.

**It is YOUR responsibility to ensure the Lithium battery you are using is both safe and suitable for operating Ridge Ryder inverters at their full rated capacities.**

Please use the information in the specifications table to ensure your lithium battery can operate your chosen inverter at full capacity without shutting down.

## MEASURING POWER REQUIREMENTS

Most electrical equipment will have a label advising of the maximum power consumption in Amps (A) or Watts (W).

To calculate requirements add all the power consumptions for the total of all items you want to power from the inverter, and ensure the total consumption does not exceed the capacity of the chosen power inverter, use the below formula.

$$\text{AMPS} \times \text{VOLTS} = \text{WATTS}$$

$$\text{WATTS} / \text{VOLTS} = \text{AMPS}$$

### Example:

If you have an appliance rated at 0.9 Amps, multiply this by 230 Volts (AS/NZ3000.2, AS/NZ60038) and you will get a consumption rating of 207 Watts.

$$0.9 \text{ Amps} \times 230 \text{ Volts} = 207 \text{ Watts}$$

Please Note: *Resistive loads* (such as incandescent lamps) are the easiest items to power up with an inverter. Inductive motors (electric motors without brushes) power tools and some televisions may require up to 6 times the consumption rating to power up. We recommend you buy a larger model than you think you'll need (at least 10% to 20% more than your largest load).

**CAUTION: ENSURE THE CAPACITY OF YOUR DEVICE DOES NOT EXCEED THE INVERTER MAXIMUM RATING.**

## APPLICATION EXAMPLES

This inverter has safety systems to prevent damage to the inverter or connected device in the event the connected load is too large, however care should still be taken when selecting the types of items to power from an inverter. For more information see **Inbuilt Safety Protections**.

- Power tools – circular saws, drills, grinders, sanders, buffers, air compressors, battery charger.
- Office equipment – computers, laptop power supply, printers, monitors, facsimile machines, scanner.
- Household items – vacuum cleaners, fans, fluorescent and incandescent lights, shavers, sewing machines.
- Kitchen appliances – coffee makers, blenders, mixers, toasters.
- Home entertainment electronics – televisions, DVD, game consoles, stereos, musical instruments.



Main Switch

Before installing the inverter, make sure the main switch is "OFF".

## INSTALLATION

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

- Dry – Do not allow water to drip or splash on the inverter.
- Cool – The inverter can operate between 0 degrees Celsius and 40 degrees Celsius, however the cooler the better.
- Safe – Do not install in a sealed battery compartment or other areas where flammable fumes may exist, such as fuel storage areas or engine and sealed battery compartments.
- Ventilated – Allow at least 30mm of clearance around the inverter for air flow. Ensure the ventilation openings on the rear and front of the unit are not obstructed
- Dust – Do not install the Inverter in a dusty environment where dust, wood particles or other filings/shavings are present. Dust can be pulled into the unit when the cooling fan is operating.
- Storage – Avoid excessive cable lengths but do not install the Inverter in the same compartment as batteries. Also do not mount the Inverter where it will be exposed to the gases produced by the battery. These gases are very corrosive and prolonged exposure also will damage the Inverter.
- Wiring - Use the recommended wire lengths and sizes in the below table. Do not exceed the rated maximum cable length of 2M.

### Recommended minimum cable size

Model	HI-1000	HI-1500
Provided Cable (700mm)	AWG8 (8.37mm) 100% copper	AWG6 (13.3mm) 100% copper
700mm to 2M	AWG6 (13.3mm) 100% copper	AWG4 (21.14mm) 100% copper

### WARNING! Shock Hazard

Before proceeding further, carefully check that the Inverter is NOT connected to any batteries, and that all wiring is disconnected from any electrical sources. Do not connect any AC appliances until after the unit has been connected to a DC source and checked for correct operation. The INPUT terminals of the inverter are to be connected ONLY to a 12V power source.

### DC Wiring Connections:

Follow this procedure to connect the battery cables to the DC input terminals of the Inverter.

Cable Length & Gauge: Cables should be as short as possible (ideally using the provided cables) enough to handle the required current by the inverter. If the cables are not an adequate gauge, (either too narrow or too long); the inverter will suffer lower performance such as poor surge capability and frequent low input voltage warnings and shutdowns.



This is due to DC voltage drop, the longer or narrower the cables the greater the voltage drop. If longer input cables are required (we recommend to NOT exceed 2M in length using the same gauge cable as provided). If needing a longer cable, use a 240V extension lead to the appliance or reposition the inverter.

Please Note: The Ridge Ryder inverters are fitted with a low voltage alarm that will emit a warning beep at 10.5V to 11.0V along with the last 2 red LED battery bars illuminated in the remote display to indicate the source battery needs charging. If inverter operation is continued and the source battery reaches 9.5V to 10.0V, all output power will stop (**low voltage cut off protection**). This will protect both the source battery, and the 240V appliance from possible damage.

**If the inverter shuts down with low voltage, it will not automatically power back on. Reset the inverter manually using the remote ON switch after input voltage has restored.**

**NOTE: The Inverter inbuilt low voltage protection is to protect the inverter from failure if the battery runs flat.**

- If the inverter is installed to the vehicle main battery (no AUX battery system), we highly recommend installing a separate low voltage disconnect switch from the battery, to prevent a flat starting battery and a stranded vehicle.
- If the inverter is installed to an auxiliary Lithium chemistry battery, the inverter low voltage protection may be lower than the BMS system cut off. If the battery charge does not keep up with load output, the BMS may engage and shut the battery down before the inverter low voltage protection is engaged.

#### **Installation:**

- Connect the cables to the power input terminals on the rear panel of the inverter. The red terminal is Positive (+) and black terminal is Negative (-). Tighten nuts to clamp the wires securely. **DO NOT OVERTIGHTEN.**
- Ensure the inverter is switched off.
- Connect the inverter power input cables **DIRECTLY** to a suitably sized 12V automotive battery. Connect the Red (+) Positive lead to the Positive battery lug. Connect the Black (-) Negative lead to the Negative battery lug.
  - Switch on inverter using main switch and check operation of LED lights on front panel. A green LED indicates power is on and inverter is functioning. (Power will not output from the AC outlets unless power button is pressed on the LED remote display panel)

Please Note: Periodically check and tighten the nuts on the DC input terminals to ensure a solid connection.



## POWER INVERTER OPERATION

Once the Ridge Ryder inverter has been correctly installed, appliances can be plugged into the AC 230/240V outlets and operated.

- Turn on the main Red switch to power up the inverter
- Check 230/240V appliance is suitably sized for inverter capacity and plug into 230/240V AC outlet.
- To turn on 230/240V AC power output simply press the Power Switch on LED remote display.
- Whilst in operation, press the “Display Switch” button to show the source battery level (Voltage) as well as the power consumption (Watts), of the connected 230/240V devices. The display will stay illuminated, until the “Display Switch” is pressed again to turn it off. This is convenient for the interior of Caravans or RV’s during night where unwanted light is a nuisance.
- If the source battery level falls below 11.0V, a low voltage input alert will beep along with the bottom 2 red battery bars on the remote control display indicating the battery should be charged. **Continued operation of the inverter will result in 240V power output shutdown once the source battery voltage reaches 9.5V to 10.0V. Care should be taken to ensure the source battery remains charged if running refrigerators and medical devices where uninterrupted power is required.**
- Cooling fans will automatically come on or off as required by the internal micro-processor control system.

**CAUTION: ALWAYS REMOVE THE 230/240V APPLIANCE BY THE PLUG. DO NOT USE THE CORD TO REMOVE APPLIANCE FROM INVERTER.**

## REMOTE CONTROL

The LED control display module can be mounted to a convenient location for operation if the inverter is installed in a hard-to-reach location. 5M of remote cable is provided.

**Warning:** Before commencing removal / connection of remote control, ensure inverter is switched off and powered down.

- Install remote to a suitable location and affix as required, ensuring remote cable is safely secured.
- Inverter main switch must be turned on; 230/240V power can be switched ON/OFF now from the remote LED display power button.

## INBUILT SAFETY PROTECTION SYSTEMS

- **OVERLOAD PROTECTION:** Will occur when the load connected to the inverter is greater than the inverter's rating. If the overload is 110% or greater than maximum inverter capacity, the red LED on front panel will illuminate and output power will be cut. This protection state will require **MANUAL RESETTING** to protect the inverter from possible failure.

### To reset:

- Switch off Inverter MAIN POWER switch.
  - Unplug and REMOVE connected 240V device.
  - SWITCH ON Inverter Main power switch.
  - The red light should now go out. If the red LED stays on, this indicates the 240V product is too large to be powered by the inverter.
- **OVER TEMPERATURE PROTECTION:** Will occur when the internal inverter temperature goes above 65°C, the red LED on front panel will illuminate, a warning beeper will also activate, and output power will be cut. If this occurs, power down the device and inverter and leave the unit to cool down. Check for operation of the cooling fans, and that they are not blocked by dust or debris.
  - **OVER VOLTAGE PROTECTION:** If the source battery voltage goes above 15.5V, the red LED on front panel will illuminate and output power will be cut off (there will be no beeping warning). Over voltage indicates a problem with the source battery or charging system, and it should be checked immediately to prevent damage to the source battery. This protection will manually reset once the over voltage state is removed.
  - **LOW VOLTAGE PROTECTION:** If the source battery level falls below 11.0V, a low voltage input alert will beep along with a red flashing LED light on the display indicating the battery should be charged.

**Pease Note:** Continued operation of the inverter will result in 240V power output shutdown once the source battery voltage reaches 9.5V to 10.0V. Care should be taken to ensure the source battery remains charged if running refrigerators and medical devices where uninterrupted power is required.

## MAINTENANCE

Very little maintenance is required to keep your Ridge Ryder inverter operating properly. You should clean the exterior of the unit periodically with a microfiber cloth to prevent accumulation of dust and dirt.

**CAUTION: ALWAYS ENSURE INVERTER IS SWITCHED OFF AND POWERED DOWN PRIOR TO ANY EXTERIOR CLEANING**

If dust is accumulating around the rear cooling fans on the unit, this can be cleaned by lightly vacuuming or gently wiping with a clean dry microfiber cloth. **DO NOT** use wet cleaning methods around the fan to prevent possible electric shock.





### Frequently asked questions:

Q. Why does the inverter turn itself off?

A. Check that the Ridge Ryder inverter is not overloaded or that the source battery has enough voltage. If the inverter is overloaded please follow the reset instructions on page 8.

Q. Is the Ridge Ryder modified sine wave inverter Reverse Polarity Protected?

A. No. If you accidentally connect the inverter to the battery incorrectly (reverse polarity) a large current will be drawn by the inverter which could damage internal sensitive electronic components. Always double-check the battery polarity before making any connections.

Q. Can I run my CPAP or RPAP Machine off an inverter connected to a source battery.

A. Please check with your Medical Equipment provider to ensure that your equipment is safe to run off the Ridge Ryder modified sine wave inverter.

## TECHNICAL SPECIFICATIONS

Model	HI-1000	HI1500
Continuous Output Power	900W	1300W
Maximum Power Output	1000W	1500W
Minimum Input Voltage	10V d.c.	
Low Input Voltage Warning (Audible Beeping Alert)	10.5-11V d.c.	
Low Input Voltage Cut Off	9.5-10V d.c.	
Input High Voltage Cut Off	15.5-16V d.c.	
Output Voltage	230-240V a.c.	
Output Frequency	50HZ	
Output Waveform	Modified Sine Wave	
Efficiency (Full Load)	≥85%	
No Load Current Draw	≤0.4A	
Inbuilt Safety Protections	Low/High Input Voltage, Overheating, Overloading & Short Circuit	
LED Indicator	Digital Display Battery Capacity & Output Power	
Remote Control Cable Length	5M	
Operating Temperature Range	-10°C to +40°C	
Cooling	Single Brushless Fan	



## WARRANTY

This product is guaranteed against defects in workmanship and materials for a period of 12 months from date of purchase.

This warranty is provided by SRGS PTY LTD, ABN 23 113 230 050 of 6 Coulthards Avenue Strathpine QLD 4500 Ph (07) 3482 7500. Supercheap Auto will offer a repair, replacement product or store credit if the product is assessed as being defective during the warranty period. To claim under this warranty, take this product to the Front Service Desk of your nearest Supercheap Auto store. For store locations, visit [www.supercheapauto.com.au](http://www.supercheapauto.com.au) (AUS) or [www.supercheapauto.co.nz](http://www.supercheapauto.co.nz) (NZ). You will need your receipt or proof of purchase. Additional information may be requested of you to process your claim. Should you be not able to provide proof of purchase with a receipt or a bank statement, identification showing your name, address and signature may be required to process your claim.

This product may need to be sent to the manufacturer to assess the defect before determining any claim. Faults or defects caused by product modification, misuse and abuse, normal wear and tear or failure to follow user instructions are not covered under this warranty.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Any expenses incurred relating to the return of this product to store will normally have to be paid by you.

For more information contact your nearest Supercheap Auto store.

The benefits to the consumer given by this warranty are in addition to other rights and remedies of the Australian Consumer Law in relation to the goods and services to which this warranty relates.

PLU: 631669 & 631670 CODE: HI-1000 & HI1500

Manufactured and packaged for SRGS PTY LTD

ABN 23 113 230 050, 6 Coulthards Avenue

Strathpine QLD 4500, Australia

MADE IN CHINA