iTECHWORLD

THE POWER EXPERT

Pure Sine Wave Inverters

12 Volt Inverters

(1000W/2000W/3000W Models)

USER GUIDE

(Revised 01/2022)

USER GUIDE

WARNINGS AND SAFETY

For safe operation and ideal performance, the iTechworld inverter must be correctly installed and operated correctly. Please carefully read, understand and follow all instructions and guidelines in this User Guide. iTechworld recommends that all wiring and installation be done by a certified technician or licensed electrician to ensure all applicable electrical wiring regulations and installation codes are met. **Failure to follow these instructions may result in damage to the unit and could also result in may result in death or serious injury.**

Disclaimer:
While iTechworld has taken every precaution to ensure the accuracy of the contents of this user guide, iTechworld assumes no responsibility for any errors or omissions.
Furthermore, all specifications and functionality may change at any time without notice.

Important:
Please read and understand the entirety of this user guide before using your iTechworld inverter. Any misuse may result in damage to the unit and/or cause harm or serious injury to the user.

!!FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DEATH OR SERIOUS INJURY!!

1. **DANGER ELECTRICAL SHOCK HAZARD: Do not disassemble the inverter. The inverter contains hazardous voltages inside. Attempting to service any internal components will void warranty and may result in death or serious injury.**
2. **DANGER ELECTRICAL SHOCK HAZARD: Do not expose the inverter to bilge water, rain, snow, spray or dust. The inverter is only intended for indoor use only.**

3. **DANGER ELECTRICAL SHOCK HAZARD: Operating the inverter without proper grounding may result in death or serious injury. Please ensure that proper ground connections are made during installation. Please consult a licensed electrician if you are unsure.**
4. **DANGER ELECTRICAL SHOCK HAZARD: Before attempting to clean the inverter disconnect DC power and any circuits connected to the inverter.**
5. **DANGER ELECTRICAL SHOCK HAZARD Keep away from children: The inverter produces 240VAC, treat the AC output receptacles the same as regular wall AC sockets at home.**
6. **DANGER: Do not under any circumstances connect the output terminals of the inverter to an incoming AC source, this will result in permanent damage to the inverter and void all warranties.**
7. **DANGER EXPLOSION HAZARD: Do not use the inverter in an environment where flammable fumes or gases are present (such as gas bottles, petrol engines or lead acid battery compartments)**
8. **Warning: Do not use substandard or damaged wiring with this inverter, it may cause fire or a shock hazard.**
9. **Warning: When connecting the DC input, pay close attention to the polarity of the input. As a reverse polarity connection will cause permanent damage to the inverter and void all warranty.**
10. **Warning: When using inductive loads, please note that they can draw up to 10 times its rated power draw. Furthermore, when running appliances with a locked rotor current such as pumps, or compressors, please turn of other non-essential appliances that are connected to the inverter.**
11. **Warning: Please ensure all ventilation vents and fan vents are not obstructed in any way. Please keep a minimum of 60mm distance around the sides of the inverter to ensure adequate ventilation. Failure to do so may result in fire or failure of the inverter.**
12. **Warning: Avoid dropping any metal tools or objects on the battery. Doing so could create a large spark or short circuit which may cause an explosion.**

13. **Warning: Batteries can supply very large currents in the event of a short circuit. A fuse must be installed on the positive supply cable as close as practical to the battery. Failure to do so provides inadequate protection in the event of a short circuit and may result in a fire hazard.**
14. **LIMITATIONS OF USE:**
    Do not use in connection with life support systems or other medical equipment or devices.

USER GUIDE

Introduction:

Thank you for purchasing the iTechworld pure sine wave inverter. These inverters produce a pure sine wave output, matching the output of your home 240V AC power point, allowing you to power sensitive electronic appliances, such as laptops and many AC powered devices anywhere.

The iTechworld pure sine wave inverter also provides 5V USB power, allowing you to power or charge many devices that require 5V USB power.

Key Features:

- Remote operation available (Optional Accessory)
- 1 x USB port: 5V 2.1A
- Temperature and load controlled cooling fans for quiet and optimal performance
- Pure sine wave output
- LED status indicators with audible alarm
- Australian standard 240V receptacle with hard wire terminal connections (only on 3000W model, requires licensed electrician for installation)
- Heavy duty aluminium case for durability and cooling.

Specifications

	Model	1000	2000	3000
Input	Voltage	12VDC		
	Max Rated Current	119A	238A	375A
	Fuse Size	175A	250A	450A
	High Voltage Protection	16VDC ± 0.5VDC		
	Low Voltage Protection	10.5VDC ± 0.5VDC		
	Efficiency	More than 90%		
Output	Rated Output Power	1000W	2000W	3000W
	Surge Power (10 sec)	1200W~1500W	2400W~3000W	3600W~4500W
	Surge Power (2 sec)	1500w~2000W	3000W~4000W	4500W~6000W
	AC Voltage	240VAC		
		AC Output Regulation: 10%		
		AC short circuit & Overload Protection		
	Waveform	Pure Sine Wave (<3% THD) at rated input voltage		
	Frequency	50Hz±1%		
Environment	Operating Temperature	-15°C to 40°C		
	Storage Temperature	-40°C to 85°C		
	Relative Humidity	20% ~ 90% RH non-condensing		
Weight		2.6kg	5.3kg	7.6kg
Dimensions (LxWxH)		310x150x70mm	320×220×90mm	360×220×150mm

Front Panel

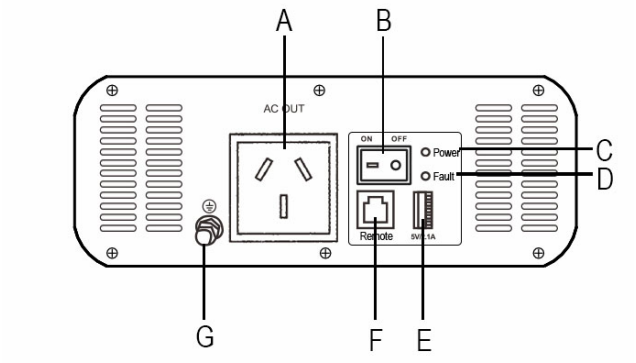


Figure 1- 1000W/2000W inverter front panel

A	AC Output Receptacle
B	Main Switch
C	Power LED Indicator
D	Fault LED Indicator
E	5V USB Socket
F	Remote Control Port (RJ11) For connecting the optional remote-control switch panel.
G	Chassis Ground Terminal

Front Panel Continued

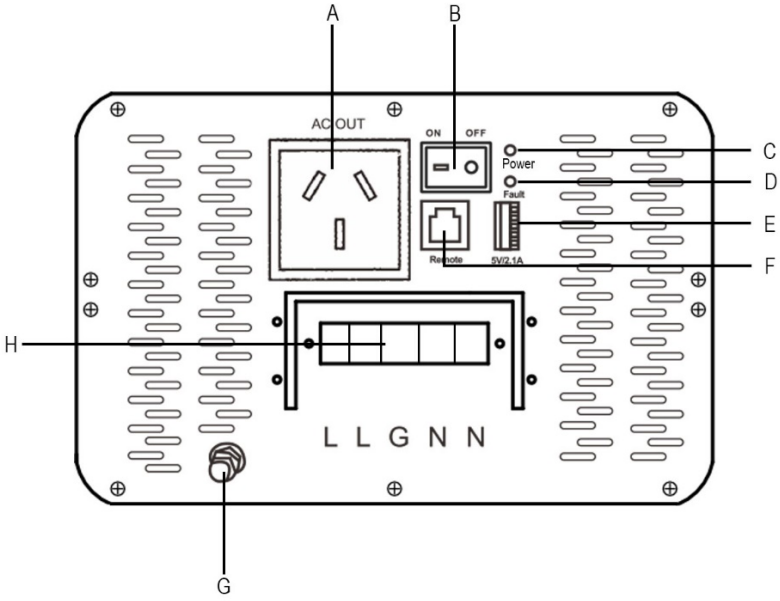


Figure 2- 3000W inverter front panel

A	AC Output Receptacle
B	Main Switch
C	Power LED Indicator
D	Fault LED Indicator
E	5V USB Socket
F	Remote Control Port (RJ11) For connecting the optional remote-control switch panel.
G	Chassis Ground Terminal
H	Hard-wire terminal block for use if loads are 15A or more **(MUST BE CONNECTED BY A LICENSED ELECTRICIAN)**

Front Panel Continued

A. AC Output Receptacle

Figure 3- Standard 10A 240VAC Australia / New Zealand receptacle

For connecting 240VAC appliances to the inverter

B. Main Switch

The main switch is used for turning ON or OFF the output of the inverter.

With the switch in the ON position, the Power indicator LED(C) will glow green, and a single beep will be emitted to indicate 240VAC is being produced.

C. Power LED indicator

Illuminates green to show that the inverter is outputting 240VAC power.

D. Fault LED indicator

Will illuminate/flash red when a fault is detected, the 240VAC output will be turned off. Please refer to the troubleshooting section.

E. 5V USB Socket

USB socket is for charging/powering 5V USB devices, such as mobile phones. When the inverter is connected to a battery, the 5V USB port will continuously output power, regardless of whether the Main Switch(A) is in the ON or OFF position.

F. Remote Control Port (RJ11)

The remote-control port is for connecting the optional remote-control panel (**sold separately**).

Front Panel Continued

G. Chassis Ground Terminal

A proper ground connection **must** be made before using the inverter. The inverter is grounded through the grounding terminal located on the front panel near the 240V outputs.

The chassis ground terminal must be connected to the negative terminal of the DC input. Please use minimum 1.5mm² cable. Please consult with a Licensed Electrician to ensure your application meets current Australian/New Zealand standards.

H. 3000W inverter hard-wire terminal block

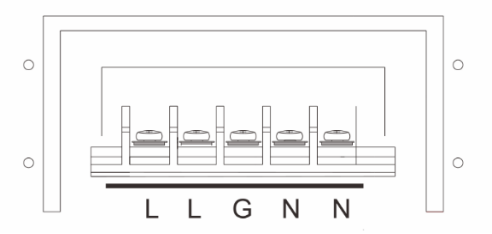


Figure 4- 3000W inverter hard-wire terminal block

Connection designations:

L- Live/Active **G**- Ground/Earth

N- Neutral

When using loads requiring 15Amps or more, the hard-wire terminal block must be used.

Make sure the terminal block cover is installed prior to turning on the inverter.

DANGER ELECTRICAL SHOCK HAZARD: ONLY LICENSED ELECTRICIANS ARE PERMITTED TO CONNECT LOADS TO THE HARD-WIRE TERMINAL BLOCK

Rear Panel

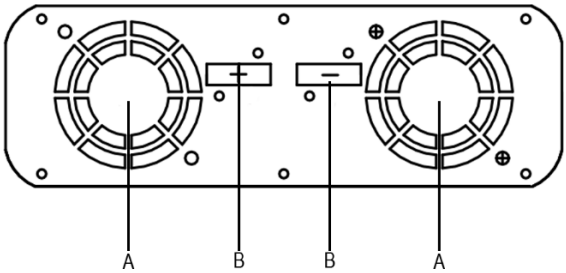


Figure 5- 1000W/2000W inverter rear panel

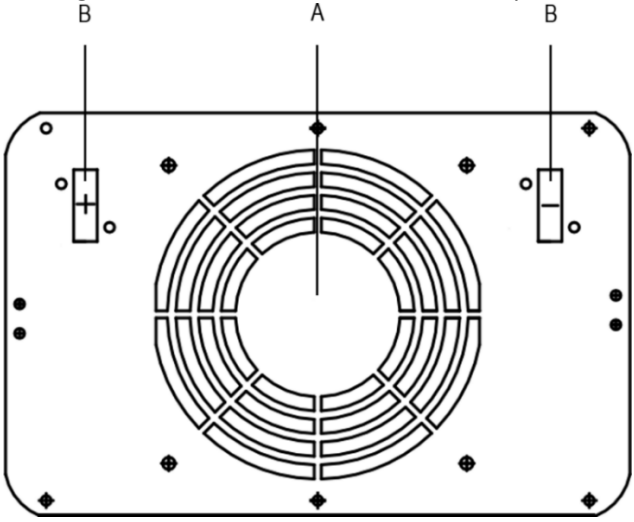


Figure 6- 3000W inverter panel

A	Cooling fan
B	DC Input Terminals

A. Cooling fan

The cooling fan(s) on the inverter are temperature and/or load controlled.

The fan(s) will automatically turn on when the AC load is 20% or more, or when the internal temperature is above 45°C.

Rear Panel Continued

B. DC Input Terminals

Warning: When connecting the DC input, pay close attention to the polarity of the input. As a reverse polarity connection will cause permanent damage to the inverter and void all warranty.

Warning: A fuse or DC circuit breaker is required; it must be installed no further than 20cm from the positive terminal of your battery. Failure to install a fuse or circuit breaker could cause a fire.

Please use the recommended fuse and minimum cable size as shown in the table below. Please keep the DC input cables as short as possible, if longer run cables are required, please use a larger cable.

Recommended Cable Size and Fuse Rating.

Model	Cable Size	Fuse/ Circuit Breaker
1000W Inverter	10mm² for lengths <1M	175A
2000W Inverter	25mm² for lengths <1M	250A
3000W Inverter	35mm² for lengths <1M	450A

Remote Control

(Sold Separately)

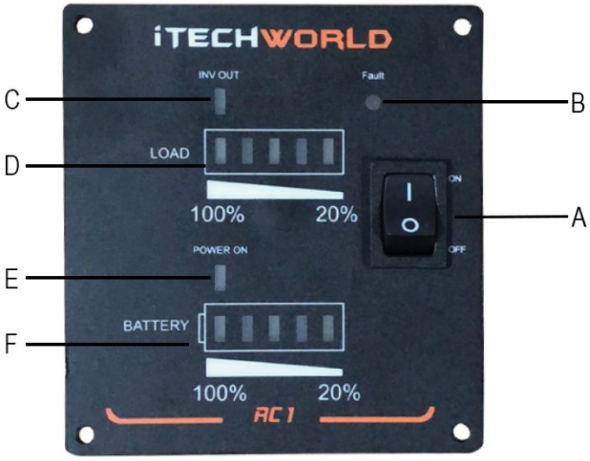


Figure 7 - Optional Remote Control

A	Remote Control Main Switch
B	Fault LED Indicator
C	AC Output Indicator
D	Inverter Load Indicator
E	DC Input Power Indicator
F	Battery Capacity Indicator

A. Remote Control Main Switch

The main switch is used for turning ON or OFF the output of the inverter. With the switch in the ON position, the AC Output Indicator LED(C) will glow green to indicate 240VAC is being produced.

B. Fault LED Indicator

Will illuminate/flash red when a fault is detected, the 240VAC output will be turned off. Please refer to the troubleshooting section.

C. **AC Output Indicator**
Will illuminate green to show that the inverter is outputting 240VAC power.

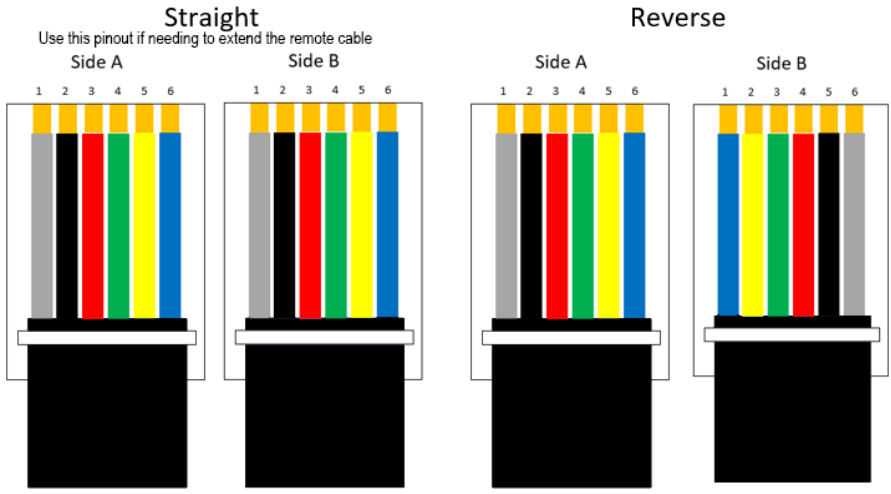
D. **Inverter Load Indicator**
Displays the approximate load being drawn from the inverter.

E. **DC Power Indicator**
Will illuminate green to show that DC power is being supplied to the inverter.

F. **Battery Capacity Indicator**
Displays the approximate remaining capacity of the battery running that is connected to the inverter.

Connecting the remote control

The remote control is connected to the inverter with the communications cable, the communications cable supplied with the purchase of the remote control. The cable is a 6-conductor RJ11 cable (the pinout of the connector is a Straight Pinout and NOT Reverse, refer to the image below). The cable is connected to the RJ-11 ports found on the rear of the remote and on the front panel of the inverter (Port F in figures 1 and 2).



Using the remote control

When using the remote control to turn the inverter on or off, please make sure the Main Switch on the inverter front panel is in the **OFF** position, or the remote-control main switch will not work.

INSTALLATION

Mounting the inverter

The location where the inverter is to be mounted must be:

- **Dry:** Do not allow any liquids to drip or splash onto the unit.
- **Cool:** Do not install in direct sunlight or close to any heat sources, the ideal ambient air temperature is between 15°C to 25°C.
- **Ventilated:** Allow at least 60mm of clearance around the inverter to allow adequate air flow, and make sure that the fans and vent holes are not obstructed.
- **Safe:** Do not install the inverter in the same compartment as the batteries (only applies to Lead Acid, AGM, Gel and Sealed Lead Acid) to prevent corrosion, or in any compartments where flammable liquids or fumes may be or may become present.
- **Clean:** Do not install the inverter in a dusty environment, as the inverter contains cooling fans, any dust present will be sucked into the inverter which may damage or shorten the life of the inverter.
- **Close to batteries:** Avoid excessive cable lengths as this will cause voltage drop and lowers the performance of the inverter.
- **Fused:** A fuse must be installed between the battery and the inverter.

Note: This inverter may generate radio frequency energy, if not installed and used in accordance with the instructions in this user guide, this inverter may cause interference with radio communications. There is no guarantee that interference will not occur in a particular installation. If the inverter does cause interference to radios or television reception, which can be determined by turning the inverter off and on, if this is the case you may try to correct the interference by one or more of the following possible solutions:

- Reorient or relocate the receiving antenna of the affected device
- Increase separation between the affected device and the inverter
- Consult the dealer or an experienced radio/TV technician for help.

INSTALLATION CONTINUED

DANGER ELECTRICAL SHOCK HAZARD: iTechworld recommends that all wiring and installation be done by a certified technician or licensed electrician to ensure all applicable electrical wiring regulations and installations codes are met. **Failure to follow these instructions may result in damage to the unit and could also result in may result in death or serious injury.**

Warning: When connecting the DC input, pay close attention to the polarity of the input. As a reverse polarity connection may cause permanent damage to the inverter and void all warranty.

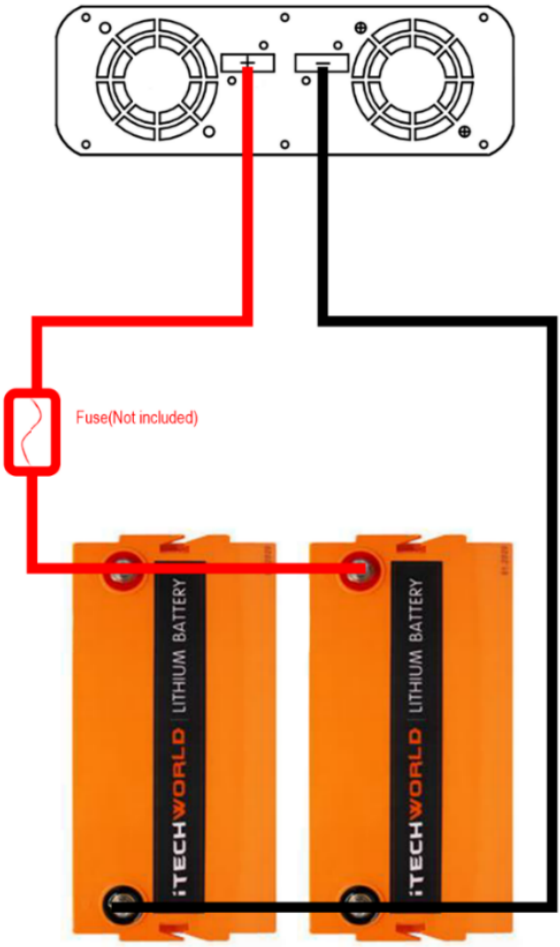


Figure 8 – recommended wiring diagram.

Connecting the inverter

Before connecting the DC input connections to the inverter, make sure that the main and remote main switch (if remote is installed) (refer to Figures 1, 2 and 7) are in the **OFF** position.

1. Connect one end of the positive DC input cable to the inverter's positive DC input terminal.
   Connect the other end of the positive DC input cable to one of the terminals of the fuse holder or circuit breaker. Then connect another DC input cable from the other terminal of the fuse holder/ circuit breaker to the positive terminal of your battery.
2. Connect one end of the negative DC input cable to the inverter's negative DC input terminal.
   Connect the other end of the negative DC input cable to the negative battery terminal.
   Caution: When connecting the negative cable to the negative terminal of the battery, some sparking may occur, this is due to the internal capacitors charging up and is normal. It is best to spread the load across 2 batteries connected in parallel (i.e., Have the positive connection to the inverter on one battery, and the negative battery connection to the last battery in the battery array)

Caution: Please ensure that all DC connections are tight, as any loose connections could result in overheating and could be a potential fire hazard.

Operating the inverter

1. Before turning on the inverter, make sure the connected AC appliance is turned OFF.
2. Turn on the inverter by moving the Main Switch to the ON position.
3. Once the Power LED indicator is illuminated, turn on the connected AC appliance.
4. Once you are done with using the connected AC appliance, turn off the appliance, then turn off the inverter by moving the Main Switch to the OFF position.

Please note, although the inverter can provide high surge power up to double the rated power output, some appliances may still trigger the inverter overload protection. If this is the case, a larger inverter will be required for those appliances.

Troubleshooting

Symptom	Possible Cause	Solutions
The Main Switch is ON, but there is no 240V AC output or any LED indicator lights on.	There is no voltage at the DC input.	1. Check that the battery fuse is not blown and in-tact 2. Check that all the DC input connections are tight. 3. Check the continuity of the DC input circuit 4. If using a lithium battery, check to see if it as gone into protection/safe mode, if so, please follow your battery manufacturer's instructions on how to reset the battery.
	The polarity of the DC input has been reversed and blown the internal fuses. (NOTE: This may have caused permanent damage to the inverter, and void all warranty)	The inverter will need to be returned to iTechworld for further assessment.
The inverter beeps once, Power LED indicator is illuminates green. But the connected AC	1. Loose AC output connections. 2. Short circuit of AC output wiring 3. The AC appliance is faulty	1. Double check that all AC output connections are tight and not loose. (Consult a licensed electrician)

appliance does not turn on.	4. The AC appliance is switched off	2. Check for short circuits with your AC wiring. 3. Test the AC appliance on you house 240V AC socket 4. Turn on the AC appliance 5. If there is still no output, contact iTechworld
The inverter beeps twice	Low DC input voltage warning. The voltage at the DC input reads below 10.5±0.5VDC	1. Check that the battery is not flat, and is fully charged, recharge if low 2. Check that the battery cables are thick enough to carry the required current over the required length. Use thicker cable if required. 3. Check for any loose connections on the DC input circuit.
The inverter beeps 3 times and the red Fault Indicator LED illuminates, and there is no AC output.	Low DC input voltage shutdown warning. When the voltage at the DC input reads below 10.0±0.5VDC, the AC output of the inverter will shut down.	1. Check that the battery is not flat, and is fully charged, recharge if low 2. Check that the battery cables are thick enough to carry the required current over the required length.

		Use thicker cable if required. 3. Check for any loose connections on the DC input circuit.

Troubleshooting Continued

Symptom	Possible Cause	Solutions
The inverter beeps 4 times and the red Fault Indicator LED illuminates, and there is no AC output.	Overvoltage detected on the DC input. When the voltage at the DC input reads higher than 16.0±0.5VDC, the AC output will shut down.	1. Check that the voltage at the DC input terminals do not exceed 16VDC, if so, attempt to lower the voltage of the battery and check battery charging voltages. 2. Ensure that maximum charging voltage of any chargers connected to the battery are set below 16.0VDC 3. Ensure that there are no unregulated charging sources such as solar panels with no regular are connected to the battery.
The inverter beeps 5 times and the red Fault Indicator LED illuminates, and	The inverter is overheating. When the internal temperature	1. Reset the inverter by turning it off and on again and check to see if the cooling

there is no AC output.	exceeds 75°C the AC output will shut down.	fan(s) are working (fans automatically turn on when the inverter is at 20% load or internal temperatures are at 45°C). If the cooling fans are not functioning, the inverter will need further assessment, please contact iTechworld. 2. If the fan is functioning, check that all ventilation slots and fan openings are not obstructed. Also ensure that adequate cool air is being circulated to the inverter and make sure ambient are temperatures do not exceed 45°C. 3. Reduce the AC load on the inverter.
The inverter beeps 11 times and the red Fault Indicator LED illuminates, and inverter shuts down	The inverter has detected a short circuit with the AC output.	Please check that the connected device is not faulty, and that there are no short circuits in the AC circuit. Please consult a licensed electrician.
The inverter is beeping continuously and the red Fault	The inverter has shut down due to overload. (Connected load has	1. Disconnect the connected load. 2. Reduce the connected load.

Indicator LED illuminates, and there is no AC output.	exceeded the surge rating of the inverter)	

Maintenance and Warranty

Maintenance

Make sure that the inverter is turned off while performing any maintenance.

To keep your inverter operating properly, there is very little maintenance required.

You should clean the exterior periodically with a dry cloth to prevent the build-up of dust and dirt.

Also check and tighten the fasteners on the DC input terminals.

Warranty

iTechworld guarantees this product against defects in materials and workmanship for a period of 12 months from the date of purchase. This warranty will be considered void if the unit has been misused, altered, or accidentally damaged. iTechworld will not be liable for any amount of damage in excess of the retail purchase price of the unit under any circumstances. Incidental and consequential damages are specifically excluded from coverage under this warranty.

This inverter is not intended for commercial use. This warranty does not apply to damage to units from misuse or incorrect **installation**/connection. Misuse includes wiring or connecting to improper polarity sources.

Return/Repair Policy:

In the unlikely event that technical problem arises, please contact iTechworld customer service on **1300 483 249** or email **service@itechworld.com.au** before returning the inverter back to the store.

If such a unit is returned within the warranty period, iTechworld will repair the unit or, at its discretion, replace it, free of charge. If the unit is repaired, new or reconditioned replacement parts may be used, at the manufacturer's discretion. A unit may be replaced with a new or reconditioned unit of the same or comparable design. The repaired or replaced unit will then be warranted under these terms for the remainder of the warranty period. The customer is responsible for the shipping charges on all returned items back to iTechworld.

Limitations:

This warranty does not cover accessories, such as adapters and batteries, defects or damage resulting from normal wear and tear (including but not limited to chips, scratches, abrasions, discoloration or fading due to usage or exposure to sun or environmental elements), accidents, damage during shipping to iTechworld's service facility, alterations unauthorized use or repair, neglect, misuse, abuse, failure to follow instructions for care and maintenance, fire and flood.

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