

## What is a Pure Sine Wave Inverter?

The output of a pure sine wave inverter provides power to the load in the ideal way. There is no better, cleaner or more efficient way to deliver power to a load. All grid connected loads are designed to operate from a sine wave power source. A Pure Sine Wave Inverter is better than a modified sine wave inverter because it: Is the only inverter that can power any type of load without negatively affecting its life span, The inverter can transition "cleanly" and rapidly through the zero crossing, has a slow voltage ramp with a slow increase in load current, and doesn't induce high current ripple in load capacitors.

## Why not a Modified, Simulated or Quasi Sine Wave Inverter?

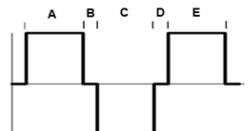
These inverters were introduced to rectify the problem of unregulated output voltage that the square wave inverters have. This inverter can regulate its output voltage and keep the load operating at a safe output voltage regardless of battery voltage and or load changes. In short, if you are on a budget and looking for an inverter to go camping with, this might be a smart choice for you. But if you have a computer, laptop, CFL / LED lights, any dimmers, fridge, LED, plasma or LCD TV then you should not power any of these devices from a Modified sine wave inverter for any length of time. These inverters are not designed to run your loads on a daily basis. It is only for casual or emergency use. Not every day load shedding.

Do not be fooled by false marketing; if you need any advice or more information do not hesitate to contact our sales or technical support department at [sales@microcare.co.za](mailto:sales@microcare.co.za) or [support@microcare.co.za](mailto:support@microcare.co.za). The marketing of this type of inverter is done in a very misleading way by having the words "sine wave" in its description, even though it is in no way shape or form anything like a Pure Sine Wave Inverter with no part of its waveform resembling any part of a sine wave.

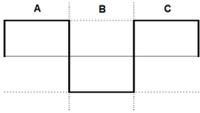
Such Inverters however still have all the negative aspects of the square wave inverter pertaining to its wave form shape. The fast rising edge forces high ripple current into capacitive load or loads with capacitors inside (PC power supplies, TV's, etc). Most electronics like cell phone chargers, microwaves and LED light controllers take strain when forced to run on this type of waveform.

Not Working! Most lights (CFL, LED, dimmers) have problems to operate or won't work at all when using this type of inverter. A distinct flicker might be noticeable especially under light load conditions when the off time (B and D) is at its maximum. A modified sine inverter has significantly more electrical noise which will cause a snow-effect on TV's and a humming sound from connected audio equipment.

The multi and floating zero state of the wave form causes most clocks and devices with timing functions like ovens and washing machines to work erratically or not at all. The same applies to variable speed devices and laser printers. Motors such as fridge compressors operate at elevated temperatures due to the higher peak coil currents.



## Why not a Square Wave Inverter?



This is the oldest type of inverter. The output voltage is unregulated and lights will dim as battery voltage decays. But worst of all when battery voltage is high and load is low the output voltage is normally above a safe level and loads are most certainly taking strain. These are typically only available as 500W or smaller sizes.

## Why not a High Frequency Inverter?

High frequency inverters have two advantages over Bi-Directional transformer isolated inverters. These are Lower shipping weight and lower cost to manufacture. It is for these reasons that inverters from abroad are typically of high frequency (HF) type. This is where the advantages over a Bi-Directional Inverter that is transformer isolated stops.

A Bi-Directional Inverter has several advantages over an HF inverter. It can firstly galvanically isolate your batteries and any other devices connected to the batteries from the grid and any surges, faults or lightening that might be transmitted down the grid lines. The Bi-Directional Inverter has a much wider input acceptance window which means that it can operate with an extremely low or high input voltage without damage. This is especially useful when trying to connect a generator to the input of the inverter. Most notably a decent Bi-Directional Inverter can be used to run loads with high startup currents such as motors, pumps, washing machines, coffee makers, welders, lawnmowers, laser printers, etc. HF inverters struggle or can't cope with these types of loads. If interested in a HF inverter, ask the supplier to guarantee its operation under these conditions. Most of all don't forget that the South African grid has a very bad reputation for voltage spikes and operation out of specification. It is therefore best to buy an inverter designed for South African conditions.

## Why not an Imported Inverter?

With the South African grid having a bad reputation for voltage spikes and operation out of specification, it is best to buy an inverter designed and built in South Africa for these conditions. With local support around the corner you won't need to wait for shipping to and from an abroad manufacturer nor pay the same for the shipping as what you paid for the inverter. Don't get caught out by the fly by night importer who wants to make a quick buck, when your inverter packs-up you'll most likely have to bin it. Microcare has been around for 25 years and even if your original supplier can't help you we will still be here to support you. Our inverters have been customized for local conditions and even include features requested by insurance companies that protect your loads, for example the inverter can delay a selectable amount of time after load shedding and wait for the grid voltage to stabilize before it reconnects itself and your load to the grid. No other supplier can provide you with the same level of service and features. Many so-called 'local' companies rebrand inverters from overseas, so ensure that your inverter is proudly South African.

## Why not a UPS with built in batteries?

If you can carry an inverter with built in batteries with 1 hand then make sure you understand what those batteries are worth and how long will it run your load. Be careful not to buy so called 'load shedding' kits that make use of these inverters. They are not designed to run loads for more than a few minutes. If bigger batteries are installed the UPS will overheat. These inverters do not have good waveforms, they rely on the fact that their small batteries will deplete before the inverter overheats and before they damage your loads. It is not meant to run your loads on a daily basis. Please consult your local accredited Microcare installer to ensure you get a Pure Sine Wave Inverter that works for you!

