**Starting By Taking a Baby Step to Break Ground for Electronic Gadget Manufacturing in Africa Continent**

**It is pertinent to say that for Rome was not built in a day.**

**We have to establish in one Gadget at a time. Hence, I am the technologist in Nigeria believing that one day Nigeria, Africa shall build their electronic industry. Also, we believe that we will form a forum of Inverter manufacturer in Nigeria and in the future in** [**Africa’s cities**](https://www.youtube.com/watch?v=kejKes5eu8g)**. Hence, this is to concentrate focus from fellow technologist in Africa to become specialized in one thing and achieve one thing at a time as** [**what the need to do to benefit from Globalizations**](https://www.imf.org/external/pubs/ft/fandd/2001/12/ajayi.htm) **. Hence, Nigeria and Africa cities, we are providing training for the citizens in knowing** [**how to build INVERTER at home**](https://www.brighthubengineering.com/diy-electronics-devices/63708-how-to-build-a-low-cost-high-efficiency-inverter/)**.**

**Inverter: Types, Circuit Diagram and Its Applications**

The power conversion from direct current to alternate current was accomplished in the middle of 19th to 20th century with the help of MG sets (motor generator sets) and rotary converters. In the early 20th century, gas-filled tubes, as well as vacuum tubes, were used as switches within inverter circuits. An inverter is an electrical device, and it is capable of changing a DC current to an AC current at a given frequency as well as voltage. For instance, if we want to provide power supply to home appliances then it will use 230V AC. In some cases, when the AC power is not available then [**power supply**](https://www.elprocus.com/classification-power-supply-different-types/)can be provided to the home appliances through a 12V inverter. Inverters are applicable for PV systems to provide the supply to the electrical devices in mountain huts, isolated houses, boats, camper vans, etc. In this article, we are going to discuss what is an inverter? **How to make an inverter**, working and its applications.

**What is an Inverter?**

An**inverter can be defined as** it is compact and rectangular shaped electrical equipment used to convert [direct current (DC) voltage to alternating current (AC) voltage](https://www.elprocus.com/alternating-current-and-direct-current-and-its-applications/) in common appliances. The a**pplications of DC** involves several small types of equipment like [solar power](https://www.elprocus.com/solar-powered-led-street-light-control-circuit/) systems. **Direct current** is used in many of the small electrical equipment such as solar [power systems](https://www.elprocus.com/what-are-the-different-types-of-faults-in-electrical-power-systems/), power batteries, [power-sources](https://www.elprocus.com/what-are-types-of-renewable-energies/), fuel cells because these are simply produced direct current.

Inverter

The basic role of an inverter is to change DC power into AC power. The AC power can be supplied to homes, and industries using the public utility otherwise power grid, the alternating-power systems of the batteries can store only DC power. In addition, almost all the household appliances, as well as other electrical equipment can be functioned by depending on AC power.

In some cases, generally, the input voltage is lesser whenever the output voltage is equivalent to the grid supply voltage of either 120 V otherwise 240 V based on the country. These devices are standalone devices for some applications like solar power. There are different types of inverters available in the market based on the switching waveform shape. An inverter uses DC power sources to provide an AC voltage to giving the supply to the electronic as well as electrical equipment.

**Working of Inverter**

The **working of an inverter** is, it converts DC to AC, and these devices never generate any kind of power because the power is generated by the DC source. In some situations like when the DC voltage is low then we cannot use the low DC voltage in a home appliance. So due to this reason, an inverter can be used whenever we utilize solar power panel.

**Types of Inverters**

Inverters are classified into two type’s namely single phase and three phases

**Single Phase Inverter**

**Single phase inverters** are classified into two types namely half-bridge inverter & full bridge inverter

**Half Bridge Inverter**

The half-bridge**inverter** is an essential building block in the full bridge inverter. It can be built with two switches where each one of its capacitors includes an o/p voltage which is equivalent to Vdc2. Additionally, the switches balance each other, if one switch is activated then automatically another switch will deactivate.

**Full Bridge Inverter**

The **full bridge**[**inverter**](https://www.elprocus.com/multilevel-inverter-types-advantages/) **circuit** converts direct current to alternate current. It can be achieved by opening as well as closing [**the switches**](https://www.elprocus.com/switches-types-working/) within the correct series. This type of inverter has dissimilar operating states which depend on closed switches.

**Three Phase Inverter**

A **three-phase inverter** is used to alter an input DC to a 3-phase output AC. Generally, its 3-arms are deferred with 120° of an angle to produce a 3-phase AC supply. The inverter control which has a 50% of the ratio as well as controlling can take place after every T/6 of the time T. The switches used in the inverter complement each other.

The **3-single phase inverters** place across the similar DC source, and the pole voltages within a 3-phase inverter are equivalent to the pole voltages within 1-phase half-bridge inverter. These inverters have two conduction modes such as 120°-mode of conduction & 180° mode of conduction.

There are many basic [electrical circuits](https://www.elprocus.com/basic-electrical-circuits-and-their-working-for-electrical-engineers/) for the power devices, [a transformer](https://www.elprocus.com/various-types-of-transformers-applications/), and switching devices. The DC alteration to an AC can be attained by stored energy within the DC source like [the battery](https://www.elprocus.com/an-overview-of-bio-battery-working-principle-types-applications/). The entire process can be done with the help of switching devices which are constantly turned ON & OFF, and then stepping-up with the transformer.

**Inverter Circuit Diagram**

The input DC voltage can be turned ON/OFF by using power devices like [**MOSFETs**](https://www.elprocus.com/mosfet-as-a-switch-circuit-diagram-free-circuits/) otherwise power transistors. The changing voltage within the primary makes an alternating voltage at resultant winding. The working of the transformer is equivalent to [**an amplifier**](https://www.elprocus.com/what-is-an-instrumentation-amplifier-circuit-diagram-advantages-and-applications/) where the output can be increased from the voltage supply by the batteries to 120 V otherwise 240 V.

There are three frequently used inverter o/p stages are, a push-pull by center tap transformer, push-pull by half-bridge, and push-pull by the full bridge. This is most popular because of its ease and, definite results; but, it employs a huge transformer with lower efficiency. An easy push-pull direct current to an alternating current inverter by center tap transformer circuit can be shown in the below figure.

**Applications of Inverter**

These are used in a variety of applications like tiny car adapters to the office, household applications, as well as large-grid systems.

* Inverters can be used as an [UPS-Uninterruptible power supplies](https://www.elprocus.com/types-of-uninterruptible-power-supply-devices/)
* These can be used as standalone inverters
* These can be used in [solar power](https://www.elprocus.com/sun-tracking-solar-power-system/) systems
* An inverter is the basic building block of an [SMPS- switched mode power supply](https://www.elprocus.com/switch-mode-power-supply-working/).
* These can be used in Centrifugal fans, pumps, mixers, extruders, test stands. Conveyors, metering pumps, and Web-handling equipment.

Thus, this is all about an overview of [inverters](https://en.wikipedia.org/wiki/Power_inverter). From the above information finally, we can conclude that the applications of inverters range from uninterrupted power supplies to electric motor’s speed controllers. The name inverter also refers to a group of rectifier inverter, which is stimulated by AC & used for changing the voltage as well as the frequency of o/p AC. Here is a question for you, what is **the difference between an inverter and UPS**?

**Inverter is design in a bigger way to serve the purpose of power problem while UPS is just for the purpose of power interruption. So, I will put the link you can follow to design inverter from the scratch.**

Click here: <https://inverter_construction.ck.page/sg3525>