

Inverters & Stabilizers

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A power inverter, or inverter, is an electrical power converter that changes direct current (DC) to alternating current (AC); the converted AC can be at any required voltage and frequency with the use of appropriate transformers, switching, and control circuits. Solid-state inverters have no moving parts and are used in a wide range of applications, from small switching power supplies in computers, to large electric utility high-voltage direct current applications that transport bulk power. Inverters are commonly used to supply AC power from DC sources such as solar panels or batteries.

A voltage Stabilizer is designed to automatically maintain a constant voltage level. A voltage regulator may be a simple "feed-forward" design or may include negative feedback control loops. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages. Electronic voltage regulators are found in devices such as computer power supplies where they stabilize the DC voltages used by the processor and other elements. In automobile alternators and central power station generator plants, voltage regulators control the output of the plant. In an electric power distribution system, voltage regulators may be installed at a substation or along distribution lines so that all customers receive steady voltage independent of how much power is drawn from the line.

An essential equipment to prevent some serious damage to computers, televisions, refrigerators, air conditioners and various other electrical appliances and to ensure the safety of its owners is the Stabilizer.

VOLTAGE STABILIZER

The main function of a Stabilizer is to make the network electric voltage that powers the appliance equal to the network that is supported by the equipment in question. This means that with the use of a Stabilizer it is easier to ensure that fluctuations in the voltage of electric current are not felt by the computer and thus prevent greater damage to equipment.

The main equipment designated for the protection of computers against excess or shortage of electric voltage stabilizer is the same, which is responsible for ensuring that this voltage is always constant, and that, in case of extreme situations, it can absorb larger impacts of these changes and prevent that most serious damage is caused to the computer.



FACTORS FOR BUYING

Technology continues advancing the need for regulators. Size, power, dependability and price weigh in on this competitive marketplace.

- Understand the required voltage regulation, application and environment, as the online specs are typically detailed.
- Look for power regulators with enclosures, meters or modules and circuits for projects and replacement parts.
- Find niche areas like an air conditioner or television or refrigerator voltage regulator for specific appliances.

Mounting

There are many options available including wall mounting which can be considered for safety specially if you have kids.

Time Delay Systems

This helps the compressor to get proper balancing time during power cuts.

Voltmeter

Voltmeter displays the regulated voltage

Thermal Overload Protection

This protects the stabilizer and compressors during high temperature burnout

Design

The voltage stabilizers nowadays also come in various styles and colors which can fit in your home decor themes.

Digital Stabilizer

There are digital stabilizers also available nowadays which are more accurate and reliable. And these can be used with multiple appliances as you can switch off one appliance and use another with the same stabilizer. These also may connect with generators that you may have installed.

POWER SIZING OF THE EQUIPMENT TO PROTECT

You need to know the rating of the equipment to be protected - the ratings are normally mentioned as kVA or in amps and whether 3-phase or single-phase. You will also need to know the nominal voltage line to neutral and line to line in case of 3-phase, and also frequency and power factor.

A simple way also can be applied to select stabilizer:

- Check the Voltage & current rating of the device. It is written on the sticker near power socket else check the manual.
- In India typically the voltage will be 220V
- Multiply 220 x Current of all devices and then add the individual devices VAs. Add a 20-25% safety margin to arrive at stabilizer rating. If you have plans to add more devices later, you can keep buffer for them.
- You should also consider the surge current which flows when you switch on the device.

In case the voltage stabilizer has a rating in watts also, assume a power factor of 0.8.

Inverters

A power inverter is a device that converts low-voltage DC (direct current) power to standard household AC (alternating current) power. An Inverter allows you to operate household appliances and electrical equipment using the power produced by a car, truck or boat battery or renewable energy sources, such as solar panels or wind turbines.



How are Inverters typically used?

Inverters provide a source of household power for electrical equipment in RVs, cars, work trucks and boats. They are also used to protect your home and belongings during a power outage, by providing emergency backup power to essential equipment such as phones, freezers, sump pumps, or medical devices.

What type of inverter do I need?

Inverter/Chargers are typically used to provide backup AC power in an emergency, such as a power outage.

What size of inverter do I need?

One of the key differences between inverters is how much AC power they produce. Add up the wattage of each device you will run simultaneously, and make sure the inverter will supply sufficient AC power.



How long will my equipment run without AC power?

Small, in-vehicle Inverters

can run equipment indefinitely while the vehicle's engine is running and battery power is available.



Large Inverter/Chargers

can provide power for extended periods. Need more time?
Just add more batteries.



What input and output voltage do I need?



Input Voltage (DC):

Select an inverter that matches the voltage of the battery supplying power to it. For example, if you are using a 12V battery, choose a 12V DC inverter.



Output Voltage (AC):

Electrical devices in the United States, Canada, Mexico and much of Latin America typically use 120V AC power; devices in the rest of the world normally use 220-250V AC power.