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### **Step Down and Step Up Voltage Converters:**

Step Down voltage converters are used to step down the electricity in the countries that use 220 volts, 230 volts, or 240 volts. These step the electricity down to 110 volts so you can use 110 volt electronics and appliances.

Step up voltage converters allow the user to step-up from 110 to 220 volts. Additionally, all of the Dowa step up converters we carry between 100 watt and 5000 watt also work for step down, meaning they can be used in both ways - to step up voltage from 110 volts to 220 volts, and also to step down voltage from 220 volts to 110 volts. This style of converter is commonly known as step-up/step-down, or a 2-way converter.

### **Applies to Dowa models from 100 watt to 5000 watt**

All the Dowa models from 100 watt to 5000 watt have step down as well as step up capabilities.

#### **Step down: When connecting an 110v appliance to a South African 220v supplies:**

The input is a 3 pin South African plug on a short lead that is fitted at the back of the converter. The output is 110v with North American sockets shown on the front panel. There may be more than one socket depending on the model. These front panel sockets are all connected in parallel. There is a switch at the back of the unit which is set at the default position of 220v. This switch selects the input voltage and MUST not be changed if the appliance is used in South Africa and left at the default position.

#### **Step up: When connecting a 220v appliance to an 110v input mains supply.**

BEFORE connecting to the mains supply flick the switch at the back of the converter to the 110v input. The South African 3 pin plug must be change with an adaptor shown below to convert the 3 pin South African plug to a North American 2 pin flat male plug. The same universal adaptor should be connected to the front panel which will now accommodate a South African plug. Thus the input is 110v and the front panel sockets are 220v ac

**IMPORTANT:** When using a converter in the step down application the rating of the converter is as stated on the front panel. HOWEVER when the converter is used in the Step up application, that is 110v input and 220v output the converter is rated at half the value shown on the model

## What are Hertz - 50 Hz vs. 60 Hz?

Hz is an abbreviation for Hertz, or cycles. One cycle per second equals one hertz, or 1Hz. North American 110-120 volt electricity is generated at 60 Hz (60 cycles per second) alternating current. Most foreign 220-240 volt electricity is generated at 50 Hz (50 cycles per second) alternating current. This cycle difference will cause analog clocks and timing circuits that use alternating current as a timing base to keep incorrect time. However, most modern electronic equipment including cellular phone chargers, computers, printers, stereos, tape and CD players, VCR/DVD players, CRT, Plasma, or LCD TVs and Monitors, etc. will not be affected by the difference in cycles.

## How to Find the Watts on Your Appliance and Select the Proper Voltage Converter appliance wattage info

To determine the correct model of voltage converter or heavy duty transformer you need, you'll first have to identify the wattage of the electronic devices or appliances that you plan to take with you. You can find this information listed on the manufacturer's label which is located on the back or bottom of the device or appliance, or in the specifications section of the appliance owner's manual.

Once the wattage of the appliance is found add minimum 40% to that value and select the converter which is that value or higher rated. Selecting a higher wattage converter than what your appliance requires is no problem only price and size being a factor.

**Important notes:** Watts may be abbreviated as W on your appliance. However if you can't find Watts or W on the label of your appliance, then you may be able to find Amps, also known as amperage or A. This can be converted to Watts in order to select the correct converter.

Voltage x Amps = Wattage.

Thus check the following example

Voltage - 110v, Amp - 1.5amp =  $110 \times 1.5 = 165$  watt

Add 40% =  $165w + 40\% = 231$  watt

The closest next model up from 165 watt is a 300 watt

Many electronic products like laptops, chargers are dual/worldwide voltage (rated 100-250V). Before using an appliance in a 220/250V country, it is important to determine its voltage and wattage. Please check your charger's rating plate where it reads INPUT AC.

If your charger reads 100-240V or similar, it has the dual voltage feature and a converter is not needed. Since the appliance is capable of operating in all voltage systems, all that is needed is the proper adapter plug to accommodate the input / outlet.



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## STEP UP / STEP DOWN CONVERTERS



INPUT VOLTAGE 220/240V AC  
OUTPUT VOLTAGE 2x110V AC SOCKETS

DW 100 - 100 WATTS OUTPUT  
DW 300 - 300 WATTS OUTPUT  
DW 500 - 500 WATTS OUTPUT

ON / OFF SWITCH



INPUT VOLTAGE 220V / 240V AC  
OUTPUT VOLTAGE 3x110V AC OUTPUT  
CIRCUIT BREAKER PROTECTION

DW1000 - 1000 WATTS OUTPUT  
DW2000 - 2000 WATTS OUTPUT  
DW5000 - 5000 WATT OUTPUT

All Dowa Units from 100W to 5000W inclusive are fitted with a Voltage Input Switch.

This Switch selects either 220V AC or 110V AC. The default position is set at the 220v mains input.

- If 220V is selected the Output is 110V AC and if 110V Input is selected the Output will be 220V AC.

- If, however, the 110V option is selected the Output Wattage is reduced by 50%.

The recommended converter rated wattage should be MINIMUM 40% higher than the load wattage of your appliance.



DW-50



220V TO 110V AC CONVERTER  
50VA  
2 PIN 220V AC INPUT  
TWO PIN FLAT PIN UNIVERSAL OUTPUT

### HSP130S

220V AC - 110V AC

130 VA

INPUT : 220V - 250V AC

OUTPUT: 110V - 120V AC

50 / 60 HZ

IN = 2PIN PLUG

OUT = 2 PIN FLAT PIN US TYPE SOCKET



TRAVEL PLUG CONVERTER  
US MALE 2 PIN INPUT  
UNIVERSAL SOCKET OUTPUT



**The recommended converter rated wattage should be MINIMUM 40% higher than the load wattage of your appliance.**