

## EWMEDIA ELECTRICAL INFORMATION/WORK SHEET

We provide electrical power at prices that vary from show to show. **For specific pricing information see the vendor packet for your show.** Vendors must provide their own lighting fixtures and 100 feet of grounded heavy-duty outdoor cable to reach electrical service. No light-duty or indoor cords allowed.

### **ELECTRICAL NEEDS WORKSHEET:**

**Vendors whose electrical needs exceed (1) 20-amp, 110-volt circuit must complete this information for each piece of equipment. If you do not complete this form, we will be unable to incorporate your needs into the electrical design plot of the Festival and therefore your booth will not be supplied with electricity.** An electrician will be available on-site (at your expense) for most shows if you have a problem.

\_\_\_\_\_ Total pieces of electrical equipment you use. (*Example: fryers, warmers, heat lamps, etc...*)

**List each piece of equipment:** The amps, watts, and volts are stamped on each piece of electrical equipment usually on a plate close to where the electrical line enters the unit. If some of the information is missing, use the formulas below to generate it. Each major appliance, cooler, grill, deep fat fryer, etc. must have its own circuit. You can typically find these values on a metal plate found on the appliance near where the electrical

cord leaves the appliance. You may not find all 3 but the

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1. Type of Equipment: \_\_\_\_\_  
Voltage \_\_\_\_\_ Amps \_\_\_\_\_ Watts \_\_\_\_\_ Phase \_\_\_\_\_
2. Type of Equipment: \_\_\_\_\_  
Voltage \_\_\_\_\_ Amps \_\_\_\_\_ Watts \_\_\_\_\_ Phase \_\_\_\_\_
3. Type of Equipment: \_\_\_\_\_  
Voltage \_\_\_\_\_ Amps \_\_\_\_\_ Watts \_\_\_\_\_ Phase \_\_\_\_\_
4. Type of Equipment: \_\_\_\_\_  
Voltage \_\_\_\_\_ Amps \_\_\_\_\_ Watts \_\_\_\_\_ Phase \_\_\_\_\_
5. Type of Equipment: \_\_\_\_\_  
Voltage \_\_\_\_\_ Amps \_\_\_\_\_ Watts \_\_\_\_\_ Phase \_\_\_\_\_

**Festival Generators - Electrical Pricing is based on gas prices. Increased fuel costs may increase price.**

Vendor Generators - If you have one, ask if they are allowed at your festival

# How to convert Watts to Amps or Amps to Watts or Volts to Watts

## Basics

You cannot convert watts to amps, since watts are power and amps are coulombs per second (like converting gallons to miles). HOWEVER, if you have at least two of the following three: **amps, volts or watts** then the missing one can be calculated. Since watts are amps multiplied by volts, there is a simple relationship between them.

However, In some engineering disciplines the volts are more or less fixed, for example in house wiring, automotive wiring, or telephone wiring. In these limited fields technicians often have charts that relate amps to watts and this has caused some confusion. What these charts should be titled is "conversion of amps to watts at a fixed voltage of 110 volts" or "conversion of watts to amps at 13.8 volts," etc.

### Some tidbits of information that you might need a refresher on:

To convert mA to A (milliamps to amps)  $1000\text{mA} = 1\text{A}$   
to convert  $\mu\text{A}$  to A (microamps to amps)  $1000,000\ \mu\text{A} = 1\text{A}$   
To converter  $\mu\text{A}$  to mA (microamps to milliamps)  $1000\mu\text{A} = 1\text{mA}$   
To convert mW to W (milliwatts to watts)  $1000\text{mW} = 1\text{W}$   
To converter  $\mu\text{W}$  to W (microwatts to watts)  $1,000,000\ \mu\text{W} = 1\text{W}$

The Following Equations can be used to convert between amps, volts, and watts.

- [Convert Watts to Amps \(at a fixed voltage\)](#)
- [Convert Amps to Watts \(at a fixed voltage\)](#)
- [Convert Watts to Volts \(at a fixed current\)](#)
- [Convert Volts to Watts \(at a fixed current\)](#)
- [Convert Volts to Amps \(at a fixed wattage\)](#)
- [Convert Amps to Volts \(at a fixed wattage\)](#)
- [Converter Volts to Amps \(at a fixed load resistance\)](#)
- [Convert Amps to Volts \(at a fixed load resistance\)](#)

## Converting Watts to Amps

The conversion of Watts to Amps at fixed voltage is governed by the equation  $\text{Amps} = \text{Watts}/\text{Volts}$

For example  $12 \text{ watts} / 12 \text{ volts} = 1 \text{ amp}$

### Converting Amps to Watts

The conversion of Amps to Watts at fixed voltage is governed by the equation  $\text{Watts} = \text{Amps} \times \text{Volts}$

For example  $1 \text{ amp} * 110 \text{ volts} = 110 \text{ watts}$

### Converting Watts to Volts

The conversion of Watts to Volts at fixed amperage is governed by the equation  $\text{Volts} = \text{Watts} / \text{Amps}$

For example  $100 \text{ watts} / 10 \text{ amps} = 10 \text{ volts}$

### Converting Volts to Watts

The conversion of Volts to Watts at fixed amperage is governed by the equation  $\text{Watts} = \text{Amps} \times \text{Volts}$

For example  $1.5 \text{ amps} * 12 \text{ volts} = 18 \text{ watts}$

### Converting Volts to Amps at fixed wattage

The conversion of Volts to Amps if the wattage is known is governed by the equations  $\text{Amps} = \text{Watts} / \text{Volts}$

For example  $120 \text{ watts} / 110 \text{ volts} = 1.09 \text{ amps}$

### Converting Amps to Volts at fixed wattage

The conversion of Amps to Volts if the wattage is known is governed by the equation  $\text{Volts} = \text{Watts} / \text{Amps}$

For Example,  $48 \text{ watts} / 12 \text{ Amps} = 4 \text{ Volts}$

### Converting Volts to Amps at a fixed resistance

If you know the volts and the load of the resistance the amps are found by Ohm's law:  
 $\text{Amps} = \text{Volts} / \text{Resistance}$

### Converting Amps to Volts at fixed resistance

If you know the amps and the resistance Ohm's law becomes  $\text{Volts} = \text{Amps} * \text{Resistance}$

## Explanation

Amps are how many electrons flow past a certain point per second. It is equal to one coulomb of charge per second, or  $6.24 \times 10^{18}$  electrons per second. Volts is a measure of how much force that each electron is under, which we call "potential". Power (watts) is volts times amps. A few electrons under a lot of potential can supply a lot of power, or a lot of electrons at a low potential can supply the same power. Think of water in a hose. A gallon a minute (think amps) just dribbles out if it is under low pressure (think low voltage). But if you restrict the end of the hose, letting the pressure build up, the water can have more power (like watts), even though it is still only one gallon a minute. In fact the power can grow enormous as the pressure builds, to the point that a water knife can cut a sheet of glass. In the same manner as the voltage is increased a small amount of current can turn into a lot of watts.

This is also why increasing the volts does not necessarily increase the available power. Power is amps times volts, so if you double the volts you halve the amps unless something in your circuit actually creates power, such as a battery, solar panel or nuclear power plant.