# Voltage, Resistance, Amps

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|---|---|---|
| Amps = Voltage / Resistance | $A = \frac{V}{R}$ | $\frac{14.5}{.4143} = 34.99$ |
| Amps = sqrt( Watts / Resistance) | $A = \sqrt{\frac{W}{R}}$ | $\sqrt{\frac{507.5}{.4143}} = 34.99$ |
| Amps = Watts / Voltage | $A = \frac{W}{V}$ | $\frac{507.5}{14.5} = 35$ |
| Resistance = Volts / Amps | $R = \frac{V}{A}$ | $\frac{14.5}{35} = .4143$ |
| Resistance = Watts / Amps^2 | $R = \frac{W}{A^2}$ | $\frac{507.5}{35^2} = .4143$ |
| Resistance = Volts^2 / Watts | $R = \frac{V^2}{W}$ | $\frac{14.5^2}{507.5} = .4143$ |
| Volts = Watts / Amps | $V = \frac{W}{A}$ | $\frac{507.5}{35} = 14.5$ |
| Volts = Amps * Resistance | $V = AR$ | $35 * .4143 = 14.5$ |
| Watts = Amps^2 * Resistance | $W = A^2 R$ | $35^2 * .4143 = 507.5$ |
| Watts = Volts * Amps | $W = VA$ | $14.5 * 35 = 507.5$ |
| Watts = Volts^2 / resistance | $W = \frac{V^2}{R}$ | $\frac{14.5^2}{.4143} = 507.5$ |

Max output watts = open voltage * short circuit amps / 2

Alternator resistance to maintain a minimum efficiency of 50% at full output = $\frac{C_V^{\,2}}{W}$ . Divide by 2 for 3 phase wired in star for resistance of each phase.

$$Amps = \frac{Ov - Cv}{R}$$

$$Ov = Cv + (Amps * R)$$

Cv = Charging voltage
Ov = Open voltage