

**Useful Electrical Formulae for Determining Amperes, Horsepower, Kilowatts and Kilovolts Amperes**

To find	Direct Current	Alternative Current	
		Single Phase	Three Phase
Amperes when Horsepower is known	$\frac{HP \times 746}{E \times \text{Eff}}$	$\frac{HP \times 746}{E \times \text{Eff} \times \text{PF}}$	$\frac{HP \times 746}{1.73 \times E \times \text{Eff} \times \text{PF}}$
Amperes when Kilowatts is known	$\frac{KW \times 1000}{E}$	$\frac{KW \times 1000}{E \times \text{PF}}$	$\frac{KW \times 1000}{1.73 \times E \times \text{PF}}$
Amperes when Kilovolt is known	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{1.73 \times E}$
Kilowatts	$\frac{I \times E}{1000}$	$\frac{I \times E \times \text{PF}}{1000}$	$\frac{I \times E \times 1.73 \times \text{PF}}{1000}$
Kilovolt Amperes	$\frac{I \times E}{1000}$	$\frac{I \times E}{1000}$	$\frac{I \times E \times 1.73}{1000}$
Horsepower(output)	$\frac{I \times E \times \text{Eff}}{746}$	$\frac{I \times E \times \text{Eff} \times \text{PF}}{746}$	$\frac{I \times E \times 1.73 \times \text{Eff} \times \text{PF}}{746}$

**Notes :**

I = Amperes

E = Phase to phase volts

Eff = Efficiency expressed as decimal (95% = 0.95)

PF = Power factor expresses as decimal (85% = 0.85)

KW = Kilowatts

KVA = Kilovolt Amperes

HP = Horsepower