

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	$\frac{HP \times 746}{E \times Eff}$	$\frac{HP \times 746}{E \times Eff \times PF}$	$\frac{HP \times 746}{1.73 \times E \times Eff \times PF}$
Amperes when Kilowatts is known	$\frac{KW \times 1000}{E}$	$\frac{KW \times 1000}{E \times PF}$	$\frac{KW \times 1000}{1.73 \times E \times PF}$
Amperes when Kilovolt is known	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{1.73 \times E}$
Kilowatts	$\frac{I \times E}{1000}$	$\frac{I \times E \times PF}{1000}$	$\frac{I \times E \times 1.73 \times PF}{1000}$
Kilovolt Amperes	$\frac{I \times E}{1000}$	$\frac{I \times E}{1000}$	$\frac{I \times E \times 1.73}{1000}$
Horsepower(output)	$\frac{I \times E \times Eff}{746}$	$\frac{I \times E \times Eff \times PF}{746}$	$\frac{I \times E \times 1.73 \times Eff \times PF}{746}$

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