

ELECTRICAL FORMULAS

To Obtain	ALTERNATING CURRENT		DIRECT CURRENT
	Single Phase	Three Phase	
Kilowatts	$\frac{V \times I \times P.F.}{1000}$	$\frac{1.732 \times V \times I \times P.F.}{1000}$	$\frac{V \times I}{1000}$
KVA	$\frac{V \times I}{1000}$	$\frac{1.732 \times V \times I}{1000}$	
Horsepower required when KW known (Power Generator)	$\frac{KW}{.746 \times \text{EFF. (GEN.)}}$	$\frac{KW}{.746 \times \text{EFF. (GEN.)}}$	$\frac{KW}{.746 \times \text{EFF. (GEN.)}}$
KW input when HP known (motor)	$\frac{HP \times .746}{\text{EFF. (MOT.)}}$	$\frac{HP \times .746}{\text{EFF. (MOT.)}}$	$\frac{HP \times .746}{\text{EFF. (MOT.)}}$
Amperes when KW is known	$\frac{KW \times 1000}{V \times P.F.}$	$\frac{KW \times 1000}{1.732 \times V \times P.F.}$	$\frac{KW \times 1000}{V}$
Amperes when HP is known	$\frac{HP \times .746}{V \times P.F. \times \text{EFF.}}$	$\frac{HP \times .746}{1.732 \times V \times \text{EFF.} \times P.F.}$	$\frac{HP \times .746}{V \times \text{EFF.}}$
Amperes when KVA is known	$\frac{KVA \times 1000}{V}$	$\frac{KVA \times 1000}{1.732 \times V}$	
Frequency (C.P.S.) HERTZ	$\frac{\text{NO. Poles} \times \text{RPM}}{120}$	$\frac{\text{NO. Poles} \times \text{RPM}}{120}$	
Reactive KVA (KVAR)	$\frac{V \times I \times \sqrt{1 - (P.F.)^2}}{1000}$	$\frac{1.732 \times V \times I \times \sqrt{1 - (P.F.)^2}}{1000}$	
Power Factor	$\frac{(\text{Max.}) KW}{(\text{Max.}) KVA}$	$\frac{(\text{Max.}) KW}{(\text{Max.}) KVA}$	
Single phase voltage		$\frac{3 \text{ phase voltage}}{1.732}$	
Horsepower (Output)	$\frac{V \times I \times \text{EFF.} \times P.F.}{746 \times 100}$	$\frac{1.732 \times V \times I \times \text{EFF.} \times P.F.}{746 \times 100}$	$\frac{V \times I \times \text{EFF.}}{746 \times 100}$
Poles =	$\frac{2 \times 60 \times \text{Frequency}}{\text{RPM}}$		
RPM =	$\frac{2 \times 60 \times \text{Frequency}}{\text{Poles}}$		

Legend

V = Volts

I = Amperes