

Basic Electrical Engineering Formulas And Equations

Electrical Formulas

These are the Basic Electrical Formulas Related to Ohm's Law.

Variables used in these formulas are as follows:

V = Voltage in Volts

I = Current in Amperes

R = Resistance in Ohms

Power = In Watts

Voltage Formulas

$$V=IR, \quad V=PI, \quad V= \sqrt{P \times R}$$

Current Formulas

$$I = V/R, \quad I=PV, \quad I= \sqrt{P/R}$$

Resistance Formulas

$$R=V/I, \quad R=P/I^2, \quad R=P/V^2$$

Power Formulas

$$P=VI, \quad P=I^2R, \quad P=V^2/R$$

Following are several additional formulas, which are useful for calculating Current, Horsepower, kW, and kVA for both Single Phase & Three Phase AC Current.

HP= Horsepower

EFE = Efficiency Factor (Use 0.9 when not mentioned)

PF=Power Factor (Use 0.8 when not mentioned)

AC = Alternating Current

To Find:	Single-Phase	Three Phase
Current, when Motor Hp is known	$\frac{HP \times 746}{V \times EFE \times PF}$	$\frac{HP \times 746}{V \times EFE \times PF \times 1.73}$
Ampers, when kW is known	$\frac{kW \times 1000}{V \times PF}$	$\frac{kW \times 1000}{V \times PF \times 1.73}$
Current, when kVA is Known	$\frac{kVA \times 1000}{V}$	$\frac{kVA \times 1000}{V \times 1.73}$
kIowatts (kW)	$\frac{V \times I \times PF}{1000}$	$\frac{V \times I \times PF \times 1.73}{1000}$
kW input, when Motor HP is Known	$\frac{HP \times 0.746}{EFE}$	$\frac{HP \times 0.746}{EFE}$
kilovolt-Amperes (kVA)	$\frac{V \times I}{1000}$	$\frac{V \times I \times 1.73}{1000}$
Horsepower (HP)	$\frac{V \times I \times EFE \times PF}{746}$	$\frac{V \times I \times EFE \times PF \times 1.73}{746}$

Useful Electrical Formulas

To Obtain	Single Phase	Three Phase
kIowatts	$\frac{V \times L \times PF}{1000}$	$\frac{1.732 \times V \times L \times PF}{1000}$
kV-A	$\frac{V \times L}{1000}$	$\frac{1.732 \times V \times L}{1000}$
Horsepower required when generator kW unknown (if generator efficiency is unknown, use 0.93)	$\frac{kW}{0.746 \times \text{Efficiency (Generator)}}$	$\frac{kW}{0.746 \times \text{Efficiency (Generator)}}$
kW input when motor hp known (if motor efficiency is unknown, use 0.85 x hp)	$\frac{HP \times 0.746}{\text{Efficiency (Motor)}}$	$\frac{HP \times 0.746}{\text{Efficiency (Motor)}}$
Ampers when motor hp is known	$\frac{HP \times 0.746}{V \times PF \times \text{Efficiency}}$	$\frac{HP \times 0.746}{1.732 \times V \times PF \times \text{Efficiency}}$
Ampers when kW is known	$\frac{kW \times 1000}{V \times PF}$	$\frac{kW \times 1000}{1.732 \times V \times PF}$
Ampers when kV-A is known	$\frac{kV-A \times 1000}{V}$	$\frac{kV-A \times 1000}{1.732 \times V}$

Abc Basic Electrical Engineering

Malika Jain, Priyanka Jain



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Career; an Annual Guide to Business Opportunities, 1957 *Career for the College Man*, 1957 *Adult Catalog: Subjects* Los Angeles County Public Library, 1970 *Industrial Marketing*, 1959 **Subject Guide to Books in Print**, 1971 *Technical Literature* Harwood Frost, Charles MacCaughey Same, 1907 Each number includes section Index to technical articles in current periodical literature Jan Mar 1907 Index to current technical literature **A-B-C of Electricity** Wm H (William Henry) Meadowcroft, 2025-03-28 Delve into the fascinating world of electricity with William Henry Meadowcroft's ABC of Electricity a foundational text meticulously prepared for republication This enduring exploration of electricity magnetism and basic electrical engineering concepts offers a clear and concise introduction to the subject Whether you're curious about the fundamental principles of circuits or the relationship between electricity and magnetism this book provides a step by step guide Meadowcroft's work lays the groundwork for understanding electronics and the vital role electricity plays in our world Explore the technology and applied science behind this powerful force offering insights that remain relevant to anyone interested in the history and development of electrical understanding A timeless resource for anyone interested in electrical phenomena This work has been selected by scholars as being culturally important and is part of the knowledge base of civilization as we know it This work is in the public domain in the United States of America and possibly other nations Within the United States you may freely copy and distribute this work as no entity individual or corporate has a copyright on the body of the work Scholars believe and we concur that this work is important enough to be preserved reproduced and made generally available to the public We appreciate your support of the preservation process and thank you for being an important part of keeping this knowledge alive and relevant

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