

## OHMS Law

$$\text{Current, (I)} = \frac{\text{Voltage, (V)}}{\text{Resistance, (R)}} \text{ in Amperes, (A)}$$

### To find the Voltage, ( V )

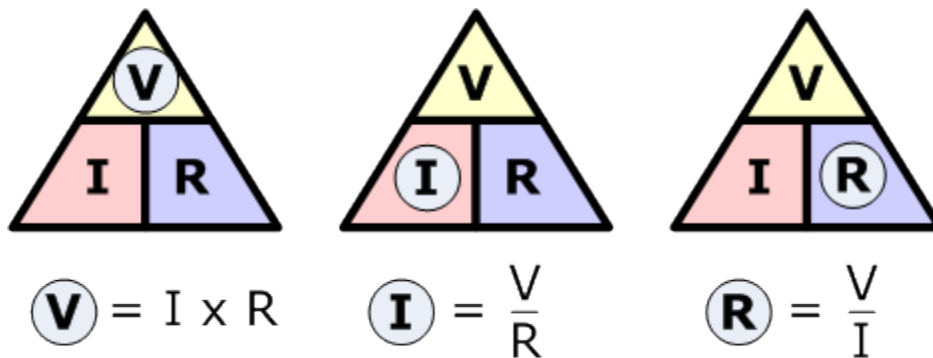
$$[ V = I \times R ] \quad V \text{ (volts)} = I \text{ (amps)} \times R \text{ (}\Omega\text{)}$$

### To find the Current, ( I )

$$[ I = V \div R ] \quad I \text{ (amps)} = V \text{ (volts)} \div R \text{ (}\Omega\text{)}$$

### To find the Resistance, ( R )

$$[ R = V \div I ] \quad R \text{ (}\Omega\text{)} = V \text{ (volts)} \div I \text{ (amps)}$$



## Horse Power Calculations:

To find the electric horsepower of a motor, use the equation:

### Direct Current

$$\text{Horsepower} = (\text{Volts} \times \text{Amps}) \times \text{Efficiency} / 746$$

### Single Phase

$$\text{Horsepower} = (\text{Volts} \times \text{Amps}) \times \text{Efficiency} \times \text{Power Factor} \times 1.73 / 746$$

### Three Phase

$$\text{Horsepower} = (\text{Volts} \times \text{Amps}) * \text{Efficiency} * \text{Power Factor} / 746$$


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Calculate Power (Watts)

$$\text{Power (Watts)} = \text{Voltage (E)} * \text{Current (I)}$$

Direct Current:

$$\text{KiloWatts (KW)} = \text{Voltage (E)} * \text{Current (I)} / 1000$$

Single Phase:

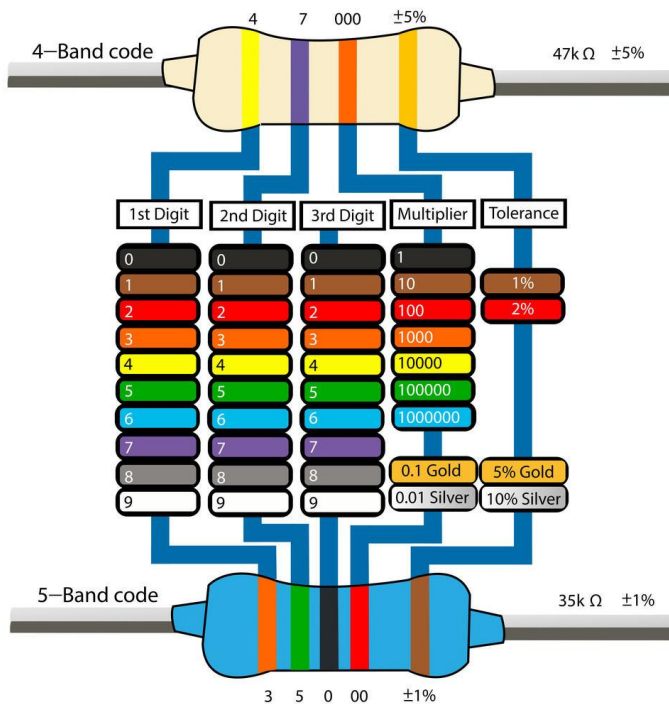
$$\text{KW} = \text{E} * \text{I} * \text{Power Factor (PF)} / 1000$$

Three Phase

$$\text{KW} = \text{E} * \text{I} * \text{PF} * 1.73 / 1000$$


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Resistor Table (How to identify the size of a resistor):





## Common Industry Acronyms:

AC = Alternating Current  
AGA = American Gas Association  
AI = Analog Input  
AO = Analog Output  
AWG = American Wire Gauge  
BIOS = Basic Input/Output System  
BPS = Bits Per Second  
C/S = Client/Server  
CIU = Computer Interface Unit  
CNG = Compressed Natural Gas  
CPU = Central Processing Unit  
CRC = Cyclic Redundancy Checking  
CSA = Canadian Standards Association  
CU = Control Unit  
DAS = Data Acquisition System  
dB = Decibel  
DC = Direct Current  
DCS = Distributed Control System  
DH = Data HI way  
DI = Digital Input  
DO = Digital Output  
DOS = Disk Operating System  
DP = Differential Pressure  
DTE = Data Terminal Equipment  
“E” or “V” = Voltage  
EMI = Electromagnetic Interference  
EPROM = Erasable Programmable Read Only Memory  
ESD = Emergency Shut-Down



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FAT = Factory Acceptance Test

FC = Flow Conditioner

FI = Field Instrumentation (transmitters, etc.)

FIM = Fieldbus Interface Module

FM = Factory Mutual

FTP = File Transfer Protocol

GB = Gigabyte (1,073,741,824 bytes)

Gb = Gigabit

GUI = Graphical User Interface

HART = Highway Addressable Remote Transducer

HMI = Human Machine Interface

HVAC = Heating, Ventilating and Air Conditioning

“I” or “A” = Current

I&C = Instrumentation and Controls

I/O = Input/Output

ICS = Industrial Control Systems

IEEE = Institute of Electrical and Electronics Engineers

IS = Intrinsically Safe or Intrinsic Safety

LAN = Local Area Network

LCD = Liquid Crystal Display

LED = Light Emitting Diode

LLP = Ladder Logic Program

LNG = Liquefied Natural Gas

MCC = Motor Control Center

MOV = Motor Operated Valve

MRO = Maintenance, Repair and Organizational Supplies

MUX = Multiplexer

NIC = Network Interface Card

O&M = Operations and Maintenance

PCS = Process Control System

PGM = Profibus Gateway Module



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PI = Pulse Input

PID = Proportional, Integral, Derivative

PLC = Programmable Logic Controller

PO = Pulse Output

PPM = Parts Per Million

PV = Process Variable

QA = Quality Assurance

QC = Quality Control

"R" = Resistance

RAID = Redundant Array of Inexpensive Disks

RAM = Random Access Memory

RAS = Remote Access Service (NT web browser feature)

RFID = Radio-frequency Identification

RIO = Remote I/O

RLL = Relay Ladder Logic

RMA = Return Material Authorization

RMS = Root Mean Squared

RTU = Remote Terminal Unit

SCADA = Supervisory Control And Data Acquisition

SCAN = Supervisory Control and Networking

SLC = Single Loop Controller

SP = Set Point

STI = Smart Transmitter Interface

TC,T/C = Thermocouple

UDC = Universal Digital Controller

UIO = Universal Input/Output

UL = Underwriters Laboratories

UPS = Uninterruptable Power Supply

URL = Uniform Resource Locater (Internet pathname/address)

USM = Ultrasonic Flowmeter

VPN = Virtual Private Network



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WAN = Wide Area Network