TABLE: SELECTED DIMENSIONAL EQUIVALENTS

Length	1 m = 3.280 ft 0 39.37 in 1cm = 10^{-2} m = 0.394 in = 0.038 ft 1 mm = 10^{-3} m 1 micron (m) = 10^{-10} m 1 Angstrom (°A) 10^{-6} m
Time	1 hr = 3600 sec = 60 min 1 milisec = 10^{-3} sec 1 microsec (μsec) = 10^{-6} sec 1 nanosec (nsec) = 10^{-9} sec
Mass	1 kg = 1000 gr = 2.2046 lbm = 6.8521×10^{-2} slugs 1 slugs = 1 lbf.sec^{-2}/ft = 32.174 lbm 1 amu = 1.66×10^{-27} kg
Force	1 newton = 1 kg.m/sec^2 1 dyne = 1 gr.cm/sec^2 1 lbf = 4.448×10^5 dyne = 4.448 newtons
Energy	1 joule = 1 kg.m^2/sec^2 = 0.239 cal= 0.738 ft.lb = 2.78×10^{-7} kwh 1 joule = 10^7 erg 1 Btu = 778.18 ft.lbf= 1.055×10^{15} erg = 252 cal 1 cal = 4.186 joule 1 erg = 1 gr.cm^2/sec^2 1 eV = 1.602×10^{-19} joules = 160×10^{-12} erg
Power	1 Watt = 1 kg.m^2/sec^3 = 1 joule/sec 1 hp = 550 ft.lbf/sec 1 hp = 2545 Btu/hr = 746 Watts 1 kWatt = 1000 Watts = 3413 Btu/hr
Pressure	1 atm = 14.696 lbf/in^2 = 760 torr 1 mmHg = 0.01931 lbf/in^2 = 1 torr 1 dyne/cm^2 = 145.04×10^{-7} 1 bar = 14.504 lbf/in^2 = 10^6 dynes/cm^2 1 micron (μ) = 10^{-6} mHg = 10^{-3} mmHg 1 hPa = 1 mb 1 hPa = 100 Pa
Volume	1 gal = 0.13368 ft^3 1 liter = 1000.028 cm^3
Temperature	1 °K = 1 °C = 1.8 °F = 1.8 °R 0 °C corresponds to 32 °F, 273.16 °K, and 491.69 °R 1 eV = 11600 °K
Magnetic Quantities	1 Gauss = 1 g$^{1/2}$/cm$^{1/2}$.sec 1 Gauss = 10^3 coul/m.sec for M 1 Gauss = $(1/4\pi) \times 10^3$ coul/m.sec for H 1 Gauss = 10^{-4} Tesla for B 1 Tesla = 1 kg/coul.sec 1 Tesla = 1 kg/A.sec^2 1 nT = 10^{-9} Tesla 1 nT = 10^{-5} Gauss 1 gamma = 1 g = 1 nT Magnetic Flux: $\phi_B = \int B \bullet dA$, 1 Weber = 1 kg.m^2/coul.sec $\left\| \vec{B} \right\|$ = kg/sec.coul
Electrical Quantities	E-potential: $\varepsilon, d\varepsilon = \vec{E} \bullet dl$ E, 1 volt = 1 kg.m^2/coul.sec^2 $\left\| \vec{E} \right\|$ = kg.m/coul.sec Current Density: coul/m^2.sec Current: coul/sec Resistance (R): 1 ohm = 1 kg.m^2/coul^2.sec

1

PHYSICAL CONSTANTS

Avogadro's Number	$N = 6.025 \times 10^{23}$ /g.mole
Bolzman's Constant	$k = 1.38 \times 10^{-23}$ joule /^{o}K
Stefan Boltzmann Constant	$\sigma = 5.7 \times 10^{-5}$ erg/cm^2.sec.^{o}K^4 $\sigma = 5.67 \times 10^{-8}$ joule/m^2.sec.^{o}K^4
Gas Constant	$R = 1545.33$ ft.lbf/lb.mole.^{o}R $R = 8.317$ joule/g-mole.^{o}K $R = 8317$ joule/kg-mole.^{o}K $R = 1.986$ Btu/lb.mole.^{o}R $R = 1.986$ cal/g.mole.^{o}K
Planck's Constant	$h = 6.625 \times 10^{-34}$ joule.sec
Biot-Savart Constant	$1/4\pi\varepsilon_o = 8.987 \times 10^9$ kg.m^3/coul^2.sec^2 $\mu_o/4\pi = 1.000 \times 10^{-7}$ kg.m/coul^2
Electronic Charge	$e = -1.6021 \times 10^{-7}$ coul
Proton Mass	$m_p = 1.67 \times 10^{-27}$ kg
Electron Mass	$m_e = 9.1 \times 10^{-31}$ kg
Speed of Light	$c = 2.998 \times 10^8$ m/sec
Newton's Constant	$g_c = 32.174$ ft.lbm/lbf.sec^2
Gravitational Constant	$k_G = 6.67 \times 10^{-11}$ m^3/kg.sec^2
Wienn's Constant	$c = 0.28$ cm.^{o}K
Sun-Earth Distance	1 AU $= 1.5 \times 10^8$ km
Solar Constant for Earth	$I_o = 1.94$ cal/cm^{2}min $I_o = 1370$ Watt/m^2
Sun's Radius	$R_{sun} = 7 \times 10^5$ km
Sun's Mass	$M_{sun} = 2 \times 10^{30}$ kg
Sun's Surface Temperature	$T = 6000$ ^{o}K
Sun's Luminosity	$L = 4 \times 10^{26}$ Watt
Earth's Radius	$R_{Earth} = 6378$ km
Earth's Albedo	A or $\alpha = \%$ 33 or 0.33
Magnetic Field at the Earths's Equator	$B_o = 0.36$ Gauss (CGS) $B_o = 0.3 \times 10^{-4}$ Tesla (MKS)
μ_o	$\mu_o = 4\pi \times 10^{-7}$ (MKS, Henry/m, or kg.m/coul^2, Henry = kg.m^2/coul^2)
R : Universal Gas Constant R* : Specific Gas Constant R* =(Rx10$^{3)}$/M , M = 29 amu for Air R* = (8.317x10^3)/29 = 286 (MKS) P = ρR*T or PV=RT	

To convert to	Multiply by
kilo	10^3
mega	10^6
giga	10^9
centri	10^{-2}
mili	10^{-3}
micro	10^{-6}
nano	10^{-9}
pico	10^{-12}
ppmv = one per million	10^{-6}
ppbv = one per billion	10^{-9}
pptv = one per trillion	10^{-12}