SI Units and Air-Conditioning Formulas

length	=	metre (m)
mass	=	kilogram (kg)
time	=	second (s)
electric current	=	ampere (A)
thermodynamic temperature	=	K
temperature	=	Celcius (°C) = (K – 273)
amount of substance	=	mole (mol)
energy enthalpy, work	=	Joule (J)
heat	=	Watts (W) = J/s
power	=	Watts (W) = J/s
force	=	Newton (N) = kg · m^2
pressure	=	Pascal (Pa) = N/m^2 (head 1 m = 9.81 kPa)

Prefixes:

giga, G	=	10^9
mega, M	=	10^6
kilo, k	=	10^3
nano, n	=	10^{-9}
micro, μ	=	10^{-6}
milli, m	=	10^{-3}

density: water 1000 kg/m^3; air 1.2 kg/m^3
specific heat: water 4.2 kJ/(kg·K); air 1.0 kJ/(kg · K)

Sensible Heat: SH = 1.2 QΔt
Total Heat: TH = 1.2 QΔh
Latent Heat: LH = 3.0 QΔw

where heat is in W

Δt	=	temperature difference, K or °C
Δh	=	enthalpy difference, kJ/kg
Δw	=	moisture concentration, g/kg dry air
Q	=	flow rate of air, L/s

Pump or Fan Power
$\boldsymbol{P} = \boldsymbol{Q} \times \boldsymbol{h} \times \rho / \boldsymbol{n}$

where

P	=	kW
Q	=	L/s
h	=	head, KPa (m/9.81)
ρ	=	density, kg/m^3
n	=	efficiency, 40% to 85%