

TEMPERATURE:

$$T = \frac{b \left[\frac{aT_d}{b+T_d} - \ln\left(\frac{RH}{100}\right) \right]}{a + \ln\left(\frac{RH}{100}\right) - \frac{aT_d}{b+T_d}}$$

DEWPOINT:

$$T_d = \frac{b \left[\ln\left(\frac{RH}{100}\right) + \frac{aT}{b+T} \right]}{a - \ln\left(\frac{RH}{100}\right) - \frac{aT}{b+T}}$$

RELATIVE HUMIDITY:

$$RH = 100 \frac{\exp\left(\frac{aT_d}{b+T_d}\right)}{\exp\left(\frac{aT}{b+T}\right)}$$

where:

$$a = 17.625$$

$$b = 243.04$$

T is in °C

T_d is in °C

RH is in %

Based on the August-Roche-Magnus approximation, considered valid for:

$$0\text{ °C} < T < 60\text{ °C}$$

$$1\% < RH < 100\%$$

$$0\text{ °C} < T_d < 50\text{ °C}$$