

Application Note Relative Humidity Calculation

Calculation of relative humidity at a given temperature

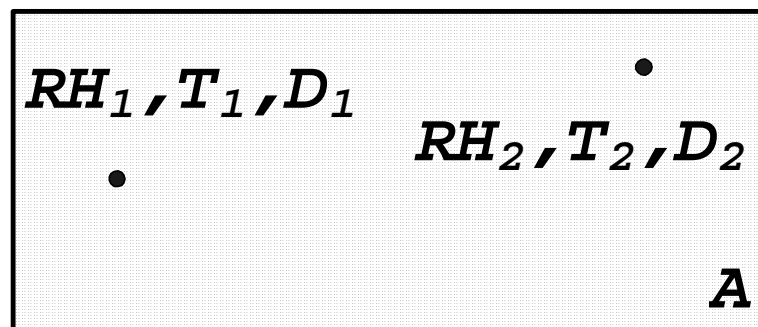


Figure 1: Chamber A with constant dew-point $D_1=D_2$.

It is assumed that the dew-point in chamber A is constant, i.e. $D_1=D_2$. Given the relative humidity RH_1 at temperature T_1 in chamber A, the relative humidity RH_2 at temperature T_2 can be calculated using

$$RH_2 = \frac{RH_1 e^{\frac{mT_1}{T_n+T_1}}}{e^{\frac{mT_2}{T_n+T_2}}} \quad (1)$$

with parameters

$$T_n = 243.12$$

$$m = 17.62$$

For calculations with micro-controllers, formula (1) can be expressed as

$$RH_2 = RH_1 * 10^{(7.6523 * T_1 / (243.12 + T_1))} / 10^{(7.6523 * T_2 / (243.12 + T_2))}$$

For further information please refer to the Application note "Dew point calculation".

Revision History

Date	Revision	Changes
March. 14, 2007	0.9 (Preliminary)	Initial revision

The latest version of this document and all application notes can be found at:

www.sensirion.com/humidity

Headquarters and Sales Office

SENSIRION AG
Laubisrütistr. 50
CH-8712 Stäfa ZH
Switzerland

Phone: + 41 (0)44 306 40 00
Fax: + 41 (0)44 306 40 30
e-mail: info@sensirion.com
<http://www.sensirion.com/>

SENSIRION Inc
Westlake Pl. Ctr. I, suite 240
2801 Townsgate Road
Westlake Village, CA 91361
USA

Phone: 805-409 4900
Fax: 805-435 0467
e-mail: michael.karst@sensirion.com
<http://www.sensirion.com/>