

Overview of Relative Humidity Sensing

TI Precision Labs – Humidity Sensing

Presented and prepared by TJ Cartwright

Humidity Fundamentals

Absolute Humidity

- Not dependent on temperature changes
- Measured in grams of moisture per cubic meter (g/m^3)

Relative Humidity

- Temperature dependent equation
- Measured as a percentage of atmospheric moisture

Dew Point

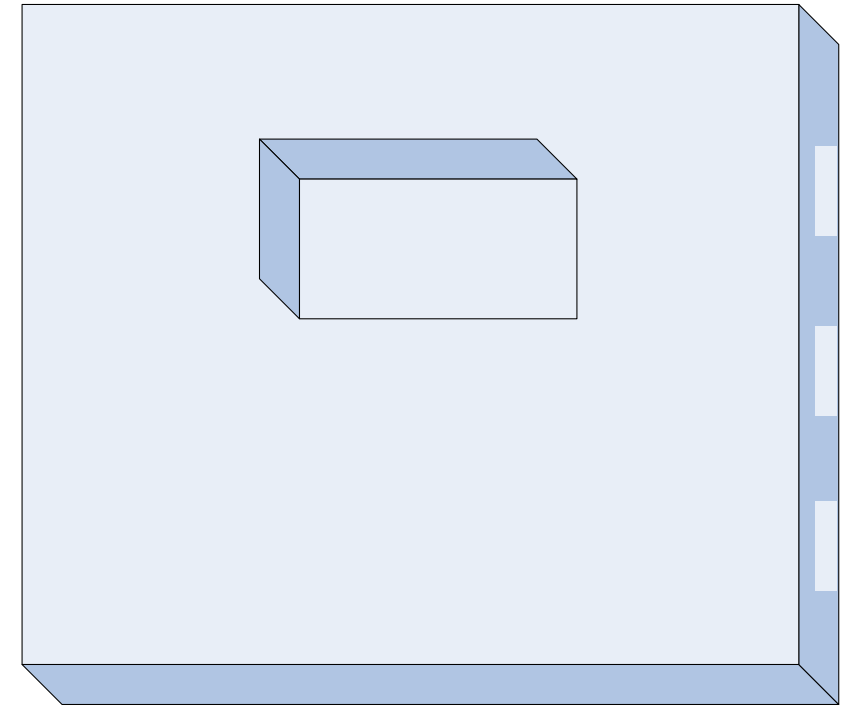
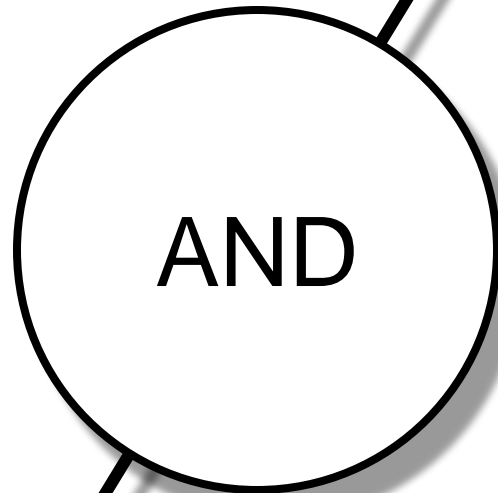
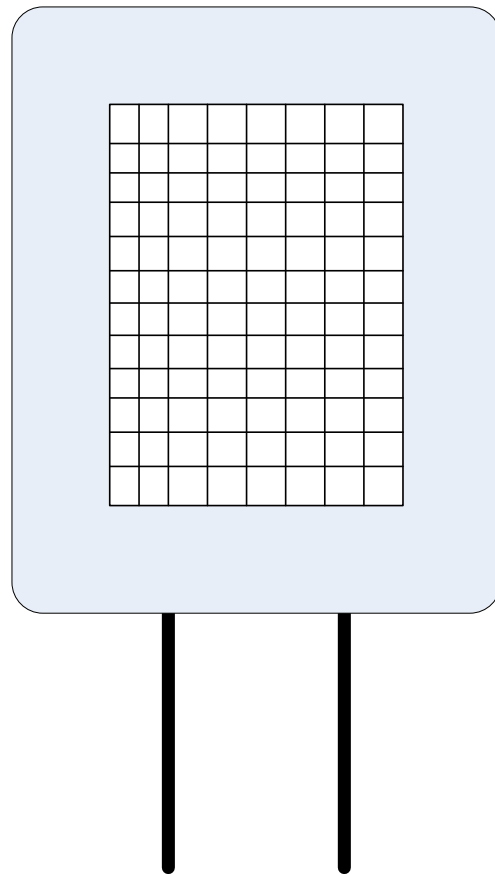
- The point at which air must be cooled to reach 100% RH

Psychrometric Chart

- Give representation to how an environment can feel depending on temperature and humidity combinations

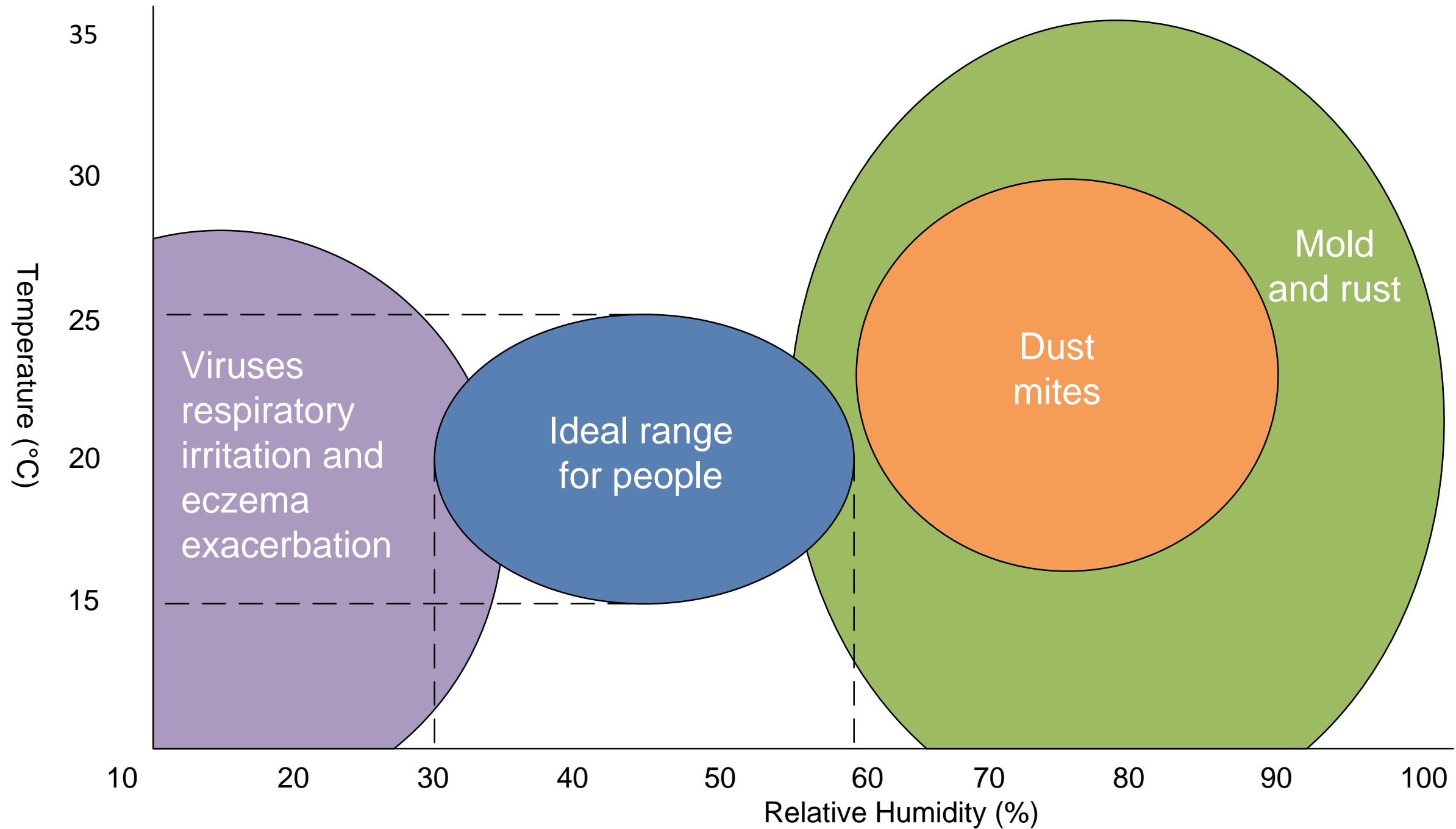
What is a Humidity Sensor?

Analog Humidity Sensor



Digital Humidity Sensor

Humidity Use Cases



Getting Started with TI's Digital Solutions



App Notes

[Humidity Portal Page](#)
[Storage and Handling](#)
[Optimizing Placement and Routing](#)
[Programming the HDC20x0](#)

[Sensors Forum](#)
[Humidity Sensor FAQ](#)



Forums

Getting Started with TI's Digital Solutions



Firmware

EVM GUI

MSP SDK

Header and .C files

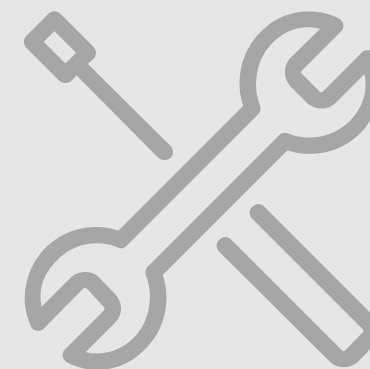
Energia w/ humidity examples

Arduino Library

Enabling 10+ year Coin Cell Battery Life

2-m Wire Communication

Gas Sensor Calibration



TIDAs

Thank you!

To find more temperature sensor resources and products visit ti.com/humidity

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Quiz

Quiz - Questions

1. What form of representing humidity is the most common for digital humidity sensors?
2. The combination of high temperatures and percentage of relative humidity can cause _____ and _____ to occur.
3. Digital relative humidity sensors provide greater accuracy, smaller size, lower cost and _____ as compared to previous analog implementations?
4. Due to the uniqueness of humidity sensors having open cavity packages we have documents about _____, optimizing placement and layout, and programming techniques to help get you started.

Answers

Quiz - Answers

1. What form of representing humidity is the most common for digital humidity sensors?
 - **Relative humidity**
2. The combination of high temperatures and percentage of relative humidity can cause _____ and _____ to occur?
 - **mold and rust**
3. Digital relative humidity sensors provide greater accuracy, smaller size, lower cost and _____ as compared to previous analog implementations?
 - **Low power consumption**
4. Due to the uniqueness of humidity sensors having open cavity packages we have documents about _____, optimizing placement and layout, and programming techniques to help get you started.
 - **Storage and handling**