

# Technical Bulletin 95

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## Relative Humidity & Dew Point

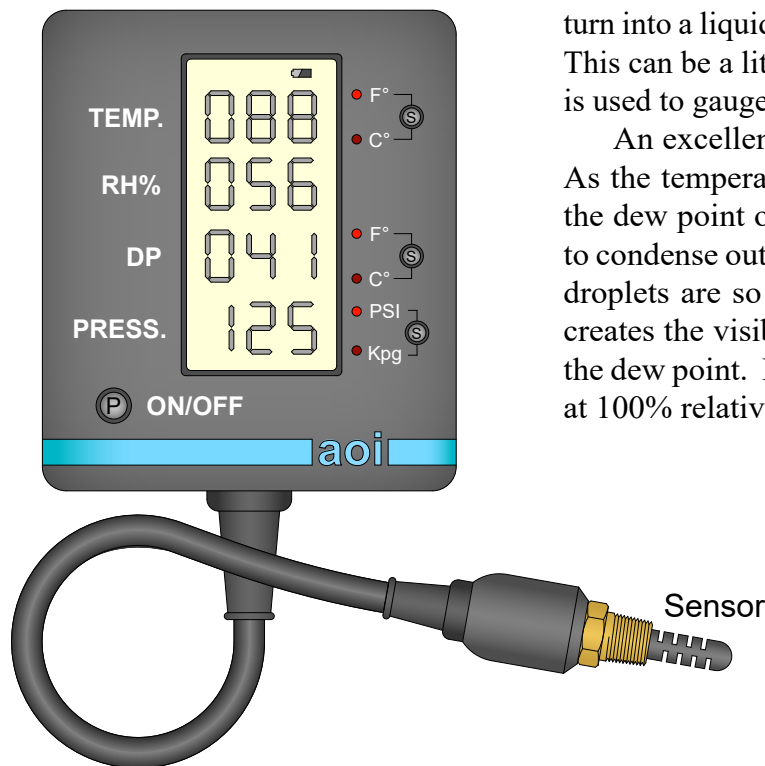
by Brian S. Elliott

The moisture content in air is not a particularly intuitive thing to understand. For the most of us, we listen to the daily weather report which tells us the temperature and, in many cases, the humidity. Armed with this information, most of us gauge moisture content based on these parameters and our perceived comfort. While relative humidity is an excellent way to report the comfort level of our environment, it's a terrible way to actually understand moisture content in air. This is because the actual moisture varies with temperature, hence the use of the word "relative." As air temperature goes up, so too does its ability to retain water vapor. As an example, air at 40°F and a relative humidity of 80% has far less actual moisture content than air at 90°F and a relative humidity of 40%. If one is trying to understand the actual moisture content in air, these figures can be confusing. It's important to understand that relative humidity is a sliding scale that is based around the temperature of the air.

For critical applications, such as compressed air, it's very important to know the actual moisture content in the air, independent from its temperature. This is the purview of the dew point measurement. Simply stated, dew

point is the temperature that moisture starts to condense out of the air. Put otherwise, it's the temperature that water vapor will turn into a liquid. Therefore, dew point is expressed in degrees. This can be a little maddening for many of us, because dew point is used to gauge content, not temperature.

An excellent example of dew point is early morning fog. As the temperature drops overnight it will eventually match the dew point of the air, at which time the water vapor starts to condense out on the form of micro droplets of water. These droplets are so small that they remain in suspension, which creates the visible fog. The temperature of the air represents the dew point. Interestingly enough, the foggy air will also be at 100% relative humidity.



Compressed Air Monitor

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