

RELATIVE HUMIDITY MEASUREMENT

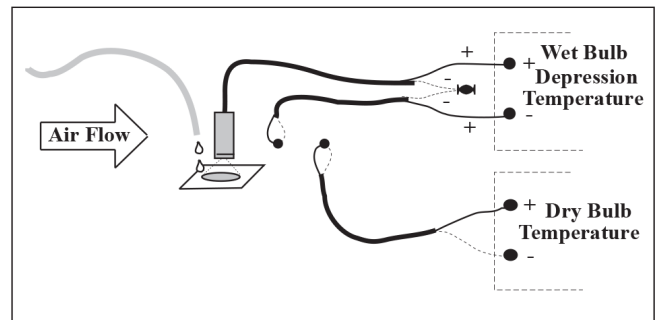
IRt/c's can be used to accurately and reliably measure actual relative humidity in many situations where there is a convenient source of water and flowing air.

An IRt/c aimed at a wet porous surface with ambient air blowing across the wet surface can actually measure what is called "wet bulb" temperature for that ambient area. (More precisely, wet bulb temperature is the equilibrium temperature of the air-water interface when a water film is evaporated. When air is moved over a wet surface, the water cools by evaporation until it reaches wet-bulb temperature, then the cooling stops, no matter how much more air is moved over the surface. The temperature at which the cooling stops is the wet bulb temperature.)

The IRt/c measures the temperature of the air-water interface on a surface directly. The quality of the water or of the absorbing material does not affect the reading, since the IRt/c can directly view the air-water interface, and the wet bulb

equilibrium temperature is not materially affected by impurities.

The highest precision method is to employ an IRt/c wired differentially with a conventional thermocouple to measure the quantity "wet bulb depression". The differential pair arrangement guarantees high accuracy, since RH is a strong function of wet bulb depression and a weak function of dry bulb temperature. Standard psychrometric tables, charts, and software algorithms can be used with the data to obtain accurate relative humidity for your environmental measurements.



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