WATER & AIR

Relative Humidity Factsheet

Skye Instruments relative humidity probes have included the Coreci capacitive RH element since 1986.This element has undergone several developments and improvements since this time, and Skye always use the highest range, meteorological specification element available. The RH element is fitted into a range of waterproof probes and dataloggers, specifically designed by Skye for measurements outdoors.

Skye's new rht+ probe and its predecessor the SKH 2000 series sensors, plus the DataHog and Helios dataloggers use the same high quality RH element. These instruments have an accuracy of ±2% RH over the full 0-100% RH range. Each design maximises accuracy, robustness and longevity - all sensors are fully recalibrateable, and the RH element easily replaced in case of damage.

The relative humidity calibration facility at Skye uses the saturated salt solution method, performed in a temperature controlled environment. This is a well documented and proven method for RH calibration. Calibration is made at two humidities, 1% and 75.4% and each sensor is issued with a calibration certificate. Skye Instrument's probes are adjustable, bringing the instruments back within original specifications when recalibrated. Recalibrated probes are also issued with figures showing the probe's readings before adjustment. An additional NAMAS traceable calibration check can also be made if required, using NAMAS calibrated salts solutions at 49.7% and 79% RH.

Annual calibration is recommended for RH sensors. If the instrument is installed in a constant high humidity environment, it is advisable to make the first calibration after 6 months once the sensor has acclimatised, and then continue with annual recalibration thereafter. From past records of regular annual recalibrations when instruments are assessed before adjustment, figures show an average of 1.8% annual change (minimum 0.1%, maximum 5.2%) at the 75.4% calibration point - which is in fact within the sensor's ±2% accuracy. At the 1% calibration point, these figures are much lower, an average of 0.8% change, minimum 0%, maximum 1.6%RH.

The RH element itself has a lifetime ranging from 2-5 years, depending upon its immediate environment. If, during annual recalibration, the sensor fails to adjust back to within specification, a new RH element is recommended. This is a very simple and low cost procedure, increasing the lifetime of the complete instrument by a further 2-5 years. The lower 2 year lifetime will apply to particularly acidic atmospheres as may be found at industrial manufacturing sites. It is more usual for a RH element to be replaced at 4-5 years when installed in non industrial sites, such as in remote weather stations.

Marine installations or very dusty sites will benefit from the use of breathable protective covers, which give the RH element extra protection, but will slow down the sensor response time. Please ask Skye for details.

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Updated 10/10/07