

# Calibrating relative humidity probes using a humidity generator with a cooled mirror reference

## Background

For Meteorological offices, Standards Laboratories, Industrial or Commercial Calibration Labs, and other businesses or institutions which operate large quantities of RH probes, it can often be more cost effective to calibrate these in-house rather than sending them away to a calibration lab. This also provides the facility to spot check probes for error at any time.

## Calibration technique

Validation is crucial to most Pharmaceutical companies, where standards (CEN, FDA & ISO) on the operation of RH probes dictate the regularity, procedure (of documentation, calibration technique and reference instruments involved).

Michell Instruments offers a range of RH generation and reference packages; catering for users with a variety of different focuses:

The HygroCal100 is an RH controlled chamber, designed for portability and quick RH checks and calibrations. Its small size and weight allows the calibrator to be easily transported around site to the nearest temperature-stable environment to the sensors requiring test.



The S904 is an RH and Temperature controlled chamber, which allows calibrations at across a range of temperatures from 10°C to +50°C with excellent temperature uniformity. It can also be specified with an RS232 interface, which allows remote control of the chamber via the supplied application software, providing facility to program full calibration routines and log the output of the probes under test.

A valid calibration is the comparison of a device under test to an authoritative reference. An authoritative reference is one which has a calibration which is traceable to attested standards.

Michell Instruments offers different options for reference instruments– with options of two different technologies; the MDM25, which utilizes a polymer sensor for rapid response to changes in RH, or the Optidew 401, which is equipped with a cooled mirror sensor, which provides a fundamental measurement of dew-point, and uses this in conjunction with a PT100 to provide a highly accurate measurement of RH. Also available for maximum precision of RH measurements is the S8000 Remote, utilizing a cooled mirror sensor which can be directly inserted into either the HygroCal100 or S904, its 0.1°C dew-point and temperature accuracy ensures the best confidence in any RH measurement available.





The OptiCal offers all the functionality of the S904, but includes a built-in Optidew Chilled Mirror Hygrometer Reference, which provides fundamental measurement of dew point, and uses this in conjunction with a PT100 to provide a highly accurate measurement of RH. The reference sensor is installed in the rear of the chamber, meaning that useable space inside is not lost in comparison to the S904. This provides the user the facility to carry out traceable calibrations in a transportable package.

Reference instruments can be supplied either calibrated against our standards traceable to NPL (National Physical Laboratory, and NIST (National Institute of Standards and Technology), or in our ISO17025 accredited laboratory.



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