

KAHN Hygrometers

HG-1 Humidity Calibrator

A bench-mount calibrator allowing on site calibration of relative humidity probes, aluminum oxide, ceramic and chilled mirror dewpoint sensors by instrument manufacturers, calibration laboratories and end users.

- RH or Dewpoint Sensor Calibration
- Totally Portable
- High Accuracy
- Uses Ambient or Compressed Air
- Temperature, % Relative Humidity and Dewpoint Displays
- Wide Measurement Range
- NIST Traceability

General Description

The Kahn Humidity Calibrator is a complete system consisting of a humidity generator, integral pump and drying tower (or fittings for customer's compressed air or inert gas supply), test chamber and Dewmet TDH Optical Hygrometer. This National Institute of Standards and Technology (NIST) traceable reference hygrometer measures and displays dewpoint, temperature and percent relative humidity (% RH). By operating two front mounted flow meters, relative humidity can be controlled between 10 and 90% RH or dewpoint can be controlled between -30° and $+20^{\circ}\text{C}$. When furnished, the rechargeable gas dryer is used to achieve humidity levels as low as 2%.

The calibrator operates by combining a stream of air from a dry gas source with a stream of gas that has been saturated with water. Mixing wet and dry streams in different proportions varies the moisture content of the exiting gas stream. The resulting moisture content can then be monitored with the reference Dewmet TDH Optical Hygrometer.



The Dewmet Hygrometer is ideally suited for the calibration of RH probes since it functions with great accuracy even at extreme RH levels. For example, the instrument operates from 2% RH to 99.5% RH with measurement accuracy of up to $\pm 0.5\%$.

The Dewmet TDH Optical Hygrometer incorporates Automatic Balance Compensation (ABC). At user programmable intervals, the instrument automatically heats the mirror to drive off the accumulated dew or frost, recalibrates itself for contaminants, and then returns to normal measuring. The Dewmet TDH Hygrometer is traceable to NIST and offers the latest technological innovations in continuous moisture measurement.

What is Relative Humidity?

Relative Humidity is the ratio of actual water vapor pressure to saturation water vapor pressure at a given temperature and is expressed as a percentage (%RH). Expressed another way, relative humidity is the humidity present relative to the highest possible humidity at the same temperature. Therefore, in order to define a measured humidity in %RH, the prevailing temperature must also be stated.

What is Dewpoint?

Dewpoint is defined as the temperature at which the water vapor pressure of a gas equals the saturated vapor pressure. It is therefore the temperature at which condensation "just begins" to occur if a gas is cooled.

Dewpoint is a fundamental unit and directly equivalent to water vapor pressure or parts per million. It is a very convenient measure of actual water content because it is not a function of temperature in the same way relative humidity is.

Calibration

Calibration is the process of comparing a measurement instrument against an authoritative reference to identify any bias or systematic error in the readings. The calibration of all Kahn ceramic, aluminum oxide and chilled mirror hygrometers is traceable to the National Institute of Standards and Technology (NIST) through master Kahn optical hygrometers, which have been directly calibrated at NIST and are periodically recalibrated. A certificate of traceability is available with any of these instruments.

SPECIFICATIONS

General

Range: 10% to 90% at ambient temperature

Gas Pressure: 150 PSIG (compressed air inlet version)

Gas Flow: 0.5 to 4 l/min. (dewpoint dependent)

Saturator: Sintered glass

Desiccant: 1 1/4 lb., 8 mesh

Power: 115 VAC, 60Hz

Operating Temperature: 10° to 35°C

Enclosure: 20.5"W x 12.6"H x 15.7"D

Weight: 45 lbs. approximately

Dewmet TDH

Digital Display: Two (red LED 3 1/2" digits)

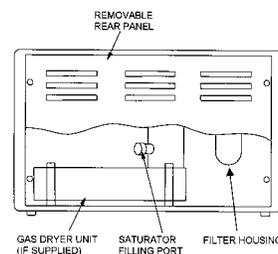
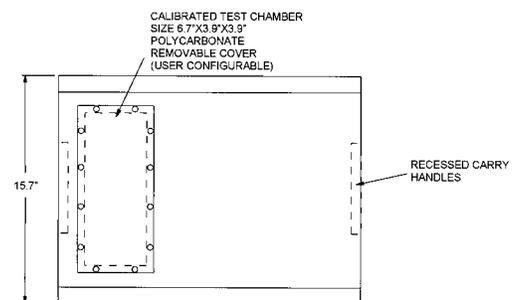
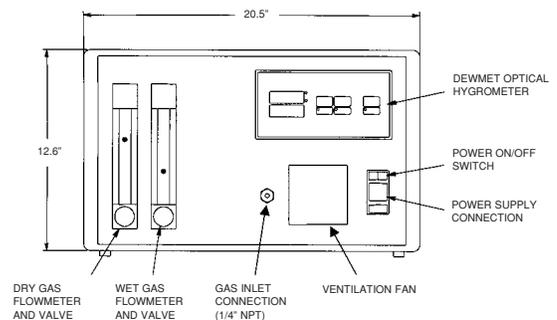
Display Units: Dewpoint (°C or °F, factory set) or %RH (switch selectable). Gas temperature (°C or °F, factory set)

Resolution: 0.1°C/°F

Dewpoint Range: -50° to +50°C

Analog Outputs: 0 to 10V for %RH and 4 to 20 mA for dewpoint, gas temperature and %RH simultaneously.

Arrangement Drawings



NOTE:

The information included herein was correct at the time of publication and supersedes all previously published data. However, it is our policy to continually improve our products to ensure ever better performance. Consequently, current Kahn products may incorporate modifications not shown or described on these pages.

KAHN

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