

KAHN Hygrometers

SERIES MD10 Dewpoint Hygrometer

A rugged, portable unit, designed for hard field use.

- Digital Readout and Analog Bar Display
- User Selectable Units
- Wide Range
- High Accuracy
- Dewpoint and Temperature Readout
- Rapid Response
- Microprocessor Based
- NIST Traceability



General Description

The Kahn MD10 is a portable, self-contained instrument for rapid determination of the moisture content of gases. It relies on the Kahn thin-film aluminum oxide sensor which is capable of discriminating between very small changes in water content.

Microprocessor-based, the unit has all circuitry built into a compact steel enclosure, further protected by a padded carrying case. Internal batteries provide complete portability with additional standard provision for line current operation as well. All instruments have a recorder output which can be used when operating on batteries or AC power supply.

Three versions are available:

The **MD10SB** uses an internal 5000 PSIG sensor housing and is operated by simply accessing a sample of the gas to be measured and venting to the atmosphere.

The **MD10PP** also employs an internal sensor and uses a sophisticated purge system which maintains the sensor in a dry standby condition (approximately -70°C dewpoint) for accelerated response at very low dewpoints.

The **MD10 Remote** provides an external sensor (with up to 10 meter cable) allowing separation of the monitor from the sensor location.

Sensor

Kahn sensors utilize an aluminum oxide film and operate as capacitors sensitive to very small changes in water vapor pressure. The capacitance of the sensor is monitored continuously and electronically converted to a linear output signal displayed in degrees F, degrees C, PPMV (for all gases), or PPMW (air, nitrogen, hydrogen, CO_2 , and natural gas). The very high sensor output minimizes electrical noise interference. The sensor also features an in-line thermistor for temperature display in degrees C.

Very stable and unharmed by contact with water, Kahn sensors incorporate the latest thin film aluminum oxide technology. Kahn sensor films are only 25% the thickness of others and combined with a larger surface area (over 1 square inch), Kahn sensors provide the fastest documented response time available today, 90% of a step change in seconds. Contamination resistant (especially to hydrocarbons), all sensors are also fully interchangeable without recalibration.

What is Dewpoint?

Dewpoint is defined as the temperature at which the water vapor pressure of a gas equals the saturated water 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 of a gas because it is not a function of temperature in the same way relative humidity is.

Calibration

The MD10 Dewpointmeter is factory calibrated to insure consistent, accurate readings. The MD10 features autocalibration, i.e. the instrument performs a self-test and calibration when turned on. No additional equipment is required. The calibration of all Kahn aluminum oxide and optical hygrometers is traceable to the National Institute of Standards and Technology. Sensors are calibrated to a master Kahn optical hygrometer which has been directly calibrated at the NIST and is periodically recalibrated. A certificate of traceability is available with any of these instruments. All sensors are fully interchangeable without the need for recalibration. In addition all calibrations are guaranteed for one year.

Installation

The Kahn MD10 Dewpointmeter is designed to be portable. The sensors on the MD10SB and MD10PP are internal to the unit. Gas is sampled by connecting teflon or stainless steel tubing to the ¼ inch NPT inlet fitting. The sensor on the Remote unit is external to the unit and is installed as near as possible to the gas sampling point either directly in-line or within a sample block.

SPECIFICATIONS

Display

LCD digital readout with analog bar display

User selectable units:

Dewpoint in °C, °F, PPMV, PPMW for Air, Hydrogen, Nitrogen, Carbon Dioxide and Methane.

Temperature readout °C

Range

-100° C to +30° C

Accuracy

±3° C

Response Time

90% response to step change in humidity:

-75° C to +10° C < 1 minute

+10° C to -75° C < 30 minutes

Outputs

0-1VDC linear output

Adjustable zero and range

Monitor Dimensions

(in inches)

Without carrying case:

8½ W x 3½ H x 10½ D

With carrying case:

10 W x 5 H x 11½ D

Weight (in lbs):

MD10SB: 11½

MD10PP: 12

MD10 Remote: 7½

Carrying Case: 3½

Operating Conditions

Temperature:

-10° C to +40° C

Pressure:

MD10SB and Remote:

VAC - 5000 PSIG

MD10PP:

0-15 PSIG

Flow Rate

0.5 to 30 SCFH

Power Requirements

115 or 220 VAC ±20% 50/60Hz.

Internal, rechargeable Ni-Cad batteries

Sensor Cable

(MD10 Remote Only)

Two meters (standard); up to 10 meters (optional).

Battery

Internal, rechargeable Ni-Cad

Recommended 6 hour charge

every 60 days

Normal Life:

11 hours continuous use between charge

70 to 100 charge/discharge cycles

Options and Accessories

Filter - Coalescing & Particulate

Sensor Block (Remote Only)

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.