

KAHN Hygrometers

Cermet II Hygrometer

A panel-mounted hygrometer designed for moisture measurement from -100° to $+20^{\circ}\text{C}$ dewpoint. Applications include dewpoint monitoring of non-flammable process gases such as air, nitrogen, sulfur hexafluoride, carbon dioxide, helium or argon in industries ranging from heat treating to pharmaceutical to utilities to semiconductor manufacturing.

- Digital Display
- High Accuracy and Repeatability
- Digital Signal Processing
- PPMV Pressure Compensated Readout
- Multiple Engineering Unit Display
- Optional Second Process Variable Input
- Dual Alarm Relays & Scalable 4-20 mA Output
- NIST Traceability
- Interchangeable Sensors
- NEMA 4 Sensor Housing

General Description

The Kahn Cermet II Hygrometer consists of a digital display with integral signal conditioning board, ceramic dewpoint sensor and an interconnecting cable. The sensor can be installed directly in the gas line or in a separate sampling gas stream by utilizing the optional sensor block. The display can be easily mounted in a control panel or other appropriate location.

Two independent, adjustable set-point relays are provided which can be used to provide an operator alarm should the dewpoint exceed user programmable limits. For systems that use PLCs or other controllers, a 4-20 mA scalable, linear output is provided as standard. Open sensor and sensor failure indication is standard and relay contacts are also offered as an option.

The digital display mounts in a $1/8$ DIN cutout. It features a large, easily readable indicator with programmable brightness. Engineering units offered include PPMV (pressure compensated), $^{\circ}\text{F}$, $^{\circ}\text{C}$, $\#/ \text{MMSCF}$ (pressure compensated), and g/m^3 (pressure compensated).

The optional second input accepts a 4-20 mA signal from any 2-wire transmitter. It can be configured as a separate display for pressure, temperature, flow or other process variable. When displaying in PPMV, $\#/ \text{MMSCF}$ or g/m^3 line pressure can be entered manually, or a pressure transmitter can be connected to the optional second input to provide automatic pressure compensation.



Sensor

The Kahn ceramic sensor is made from state-of-the-art metalized ceramic and replaces traditional materials such as aluminum, silicon and hygroscopic salts. This sensor is made from a ceramic tile that is plated and vapor deposited to form a surface that is very sensitive to small changes in water vapor pressure.

Our proprietary coating processes make the Kahn ceramic sensor inherently faster to respond than other impedance sensors currently available. It also features greater resistance to corrosive gases and other contaminants. All of Kahn's ceramic sensors are fully interchangeable without display recalibration.

The sensor features the latest digital technology with calibration data stored directly in the sensor's memory. It can be located up to 4000 feet from the digital display without affecting calibration and will operate at pressures from near vacuum to 5000 PSIG and temperatures from -40°C to $+60^{\circ}\text{C}$. The sensor is equipped with a built-in thermistor for automatic temperature compensation.

When used in conjunction with an appropriate intrinsically safe barrier unit, the special configuration of the Cermet II may be used in environments containing flammable gases.

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 Kahn Cermet II Hygrometer is factory calibrated to insure consistent, accurate readings. The calibration of all Kahn ceramic, aluminum oxide and chilled mirror hygrometers is traceable to the National Institute of Standards and Technology through master Kahn optical hygrometers which have been directly calibrated at the NIST and are periodically recalibrated. A certificate of traceability is available with any of these instruments. All sensors are fully interchangeable without the need for display recalibration. In addition all calibrations are guaranteed for one year.

Installation

The meter can be installed in a control panel or used as a stand alone device. The sensor can be installed directly in the main gas line or in a sample stream.

SPECIFICATIONS

Measurement Range

-100° to +20°C
-148° to +68°F
0.001 to 9999 PPMV
(pressure compensated)
0-1000 #/MMSCF of natural gas
(pressure compensated)

Accuracy

±1°C from -59° to +20°C
±2°C from -100° to -60°C

Resolution

0.1°C from -79° to +20°C
1.0°C from -100° to -80°C

Outputs

4-20 mA
0-10 VDC (optional)
RS232 (optional)
RS485 (optional)
Relay, Dual, Adjustable
(10A/240VAC)

Display

°C, °F, PPMV, #/MMSCF, g/m³

Sensor

Ceramic moisture sensor with 80µ sintered metal guard, NEMA 4 housing.

Dimensions

Display:
1.9" x 3.8" x 5.6"
Panel cutout:
1.77" x 3.62" (1/8 DIN)
Sensor: 5.4"L x 1.23"W

Operating Conditions

Pressure:
Vacuum to 5000 PSIG
Temperature
Sensor Operating:
-40° to +60°C
Sensor Compensated:
-20°C to +40°C
Display Operating:
0° to +50°C

Flow

Recommended rate:
1-5 L/min (2-10 SCFH)
Velocity:
20 meters/second maximum

Power Requirements

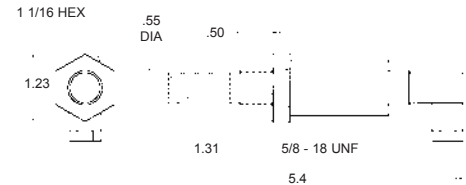
115 or 220 VAC (standard)
9-60 VDC (optional)

Sensor Cable

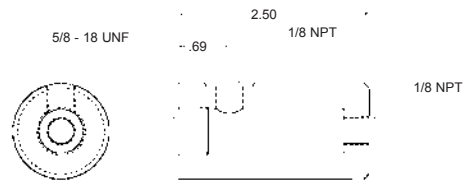
6 feet (standard)
Operational to 4000 ft.

Options, Accessories

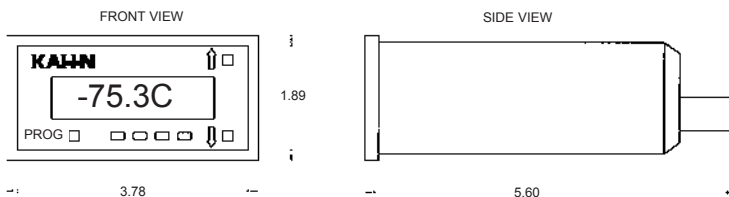
Sensor Block
Second Process Variable Input
10µ Sintered Metal Guard
Sample System
Coalescing/Particulate Filter
NEMA 4 Enclosure (Display)
Isolated Analog Output
Intrinsically Safe Barrier Unit with I.S. Sensor
Open Sensor Alarm Relay



Ceramic Sensor



Sensor Block



Digital Display Meter

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.