

# KAHN: A full range of hygrometers for spot check or continuous monitoring

## A Choice of Technologies

Kahn manufactures a full line of precision hygrometers using the most advanced, proven technologies:

- Ceramic sensors yield the fastest response time and greatest corrosion resistance
- Extremely accurate chilled mirror optical systems provide a fundamental method of dewpoint measurement

In addition, you get the flexibility of local, remotely installed, or portable hygrometers rugged enough for any industrial environment. Kahn also offers the latest in dewpoint transmitters with both analog and digital outputs to your computer or PLC.

Kahn features intrinsically safe designs for hazardous locations. All Kahn hygrometers offer traceability to national and international standards.

Kahn offers a wide variety of sampling systems for use with many gases, including natural gas, and at pressures from vacuum to 5000 PSIG.

Our off-the-shelf and custom-designed calibration equipment will allow you to easily verify sensor performance or even outfit an entire metrology laboratory.

We invite you to compare our technical advantages. You will find that, feature for feature, Kahn Instruments sets the standard in moisture measurement.

## CERAMIC SENSORS

*Fastest response time and corrosion resistant*

Kahn pioneered the use of ceramic substrate sensors to meet the need for accelerated response and for measuring dewpoints in mildly corrosive gases. The result is a ceramic sensor that not only provides the fastest documented response to dewpoint changes, but also uses a ceramic base material and innovative film deposition techniques to improve chemical and mechanical resistance to corrosive gases. In addition, Kahn sensors are very stable and are not harmed by contact with water. All ceramic sensors are fully interchangeable without the need for hygrometer recalibration.



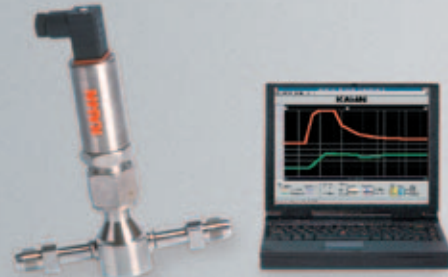
### Cermax\* and Easidew Portable Hygrometers

- Dewpoints from -120°C to +30°C
- Pressures to 6000 PSIG (Cermax) or 5000 PSIG (Easidew)
- °C, °F, #/MMSCF, and PPM displays (Cermax) or °F (Easidew)
- RS232 output (Cermax)
- 10,000 point datalogging capability (Cermax)
- Temperature compensation
- Temperature or pressure inputs (Cermax)
- Internal dewpoint sensors



### Easidew Dewpoint Transmitter\*

- Dewpoints from -110°C to +20°C
- Pressures to 5000 PSIG
- 12 to 28 VDC operation
- Linear 4-20mA output signal
- Temperature compensation
- Stainless steel NEMA 4 housing
- Adjustable output error settings



### Pura High Purity Gas Dewpoint Transmitter\*

- Dewpoint range to -120°C/-184°F/<1ppbv
- High integrity 1/4 or 1/2 inch male VCR fittings
- 12 to 28 VDC operation
- 4-20mA (standard) and RS485 (optional) output
- Adjustable 4-20mA output span
- 10<sup>-9</sup> Torr to 3500 PSIG operating pressure
- Temperature compensation
- Adjustable output error settings
- Double bagged to clean room standards



### Cermet II Hygrometer\*

- Dewpoints from -110°C to +20°C
- Pressures to 5000 PSIG
- °C, °F, #/MMSCF and PPMV displays
- 4-20mA or 0-10VDC outputs
- Pressure compensated PPMV and #/MMSCF
- Up to three adjustable alarm setpoints
- Second process input (temp. or press.)
- Open sensor alarm



### \*Intrinsically Safe (I.S.) Versions Available

- Portable/Transmitter/Single Channel
- Factory Mutual (FM), Canadian Standards Association (CSA) and CENELEC approved
- Class I, Division 1, Groups A, B, C, D

NOTE: The information included herein was correct at the time of publication and supersedes all previous data. It is our policy to continually improve our products to insure even better performance. Consequently current Kahn products may incorporate modifications not shown on these pages.

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## CHILLED MIRROR OPTICAL SYSTEMS

### Fundamental Dewpoint Measurement

Kahn offers two optical (chilled mirror) hygrometer products, Optidew and Series 4000, to meet the requirements of a broad range of dewpoint measurement applications. Each product is available in a variety of models to suit the user's specific needs. Kahn's 20 years of experience in chilled mirror technology has produced extremely sensitive (parts per billion), accurate and drift-free instrumentation for measurement of gas dewpoint. All Kahn hygrometers offer measurement traceability to national and international standards.



#### Optidew

- -60°C to +115°C dewpoint measurement range
- Accuracy of  $\pm 0.2^\circ\text{C}$
- 1-Stage or 2-Stage Peltier cooling
- Automatic contamination compensation
- Built-in data hold function
- Analog and digital outputs
- Transmitter or display models
- High temperature sensor available

The Optidew Dewpoint and RH Hygrometer is a compact, sturdy and economical instrument that provides continuous dewpoint measurement, display and output. Key features include:

#### Models

##### Optidew-Wall

- Wall mount transmitter with integral sensors

##### Optidew-Remote

- Transmitter with remote sensors and 6 foot cables

##### Optidew-Probe

- Transmitter with probe type sensors

##### Optidew-Bench

- Bench mount hygrometer with monitor, carry handle, remote sensors and 6 foot sensor cables



The Series 4000 Hygrometer family features the most accurate and versatile optical hygrometers available in the marketplace today. Key features include:

#### Series 4000

- Dewpoint measurements from -100°C to +85°C
- Accuracy of  $\pm 0.1^\circ\text{C}$
- Resolution  $\pm 0.1^\circ\text{C}$
- 3-Stage Peltier cooling
- Automatic contamination compensation
- Current, voltage and RS232 digital outputs
- Dual optics detection system
- Precision platinum resistance thermometer
- Microscope to monitor condensation on mirror
- Optional pressure compensation
- Built-in data hold function

#### Models

##### S4000 Integrale

- Lightweight with measurement range to -60°C
- Dual display: °F or °C dewpoint and PPM or %RH

##### S4000 Remote

- Remote sensor in a compact housing
- Climatic version: dewpoints to +85°C

##### S4000RS\*

- Temperature-controlled sensor body for dewpoint measurements to -85°C (230 ppb)

##### S4000TRS\*

- Temperature-controlled sensor body for dewpoint measurements to -100°C (13 ppb)

## Count on Kahn Experience

Kahn, a leader in pneumatic, hydraulic and electronic technology for over 50 years, provides innovative solutions to practical measurement problems. Since Kahn's first moisture measurement designs were introduced 40 years ago, we have manufactured high quality, durable hygrometers for many specialized applications, often under demanding conditions. Our long-standing success in customer satisfaction and our expanding product line ensure that Kahn can provide you with hygrometers to suit all your needs.

Kahn provides technical support and maintenance for all of its equipment, from the earliest models to the latest innovations. Our hygrometers are also backed by the finest warranty in the industry: One full year on calibration and workmanship for both the instrument and sensor.

## Some Satisfied Customers

Air Products  
Amgen  
Cargill  
Duke Energy  
DuPont  
ExxonMobil  
General Electric  
General Motors  
Harvard University  
Hewlett Packard  
Honeywell  
IBM  
Intel  
Lockheed Martin  
Merck  
NASA  
National Weather Service  
Pratt & Whitney Aircraft  
Tennessee Valley Authority  
Texas Instruments  
Transwestern Pipeline  
U.S. Navy

\*The S4000RS and S4000TRS also feature our unique "speed pipe" technology that improves the response speed at trace moisture levels. The "speed pipe" concentrates the formation of ice crystals on the mirror surface and can reduce response time at trace moisture levels by a factor of four times.

The calibrations of Kahn hygrometers are traceable to the National Institute of Standards and Technology. Sensors are calibrated through a master optical hygrometer which has been calibrated at the NIST and is periodically re-calibrated. A certificate of traceability is provided with any of these instruments.

# HYGROMETER SPECIFICATIONS

MODEL	CERAMIC					OPTICAL		
	PORTABLE		TRANSMITTER		ON-LINE	OPTIDEW	S4000	S4000
	EASIDEW	CERMAX*	EASIDEW*	PURA*	CERMET II*		INTEGRALE/ REMOTE	RS/TRS
RANGE & ACCURACY	-100°C to +20°C -110°C to +20°C (Optional) ±2°C	-120°C to +30°C ±2°C (-100°C to -60°C) ±1°C (-59°C to +20°C)	-100°C to +20°C -110°C to +20°C (Optional) ±2°C	-120°C to -40°C ±1°C (-40°C to -60°C) ±2°C (-61°C to -100°C) ±4°C (-101°C to -120°C)† † Estimate	-100°C to +20°C -110°C to +20°C (Optional) ±2°C (-100°C to -60°C) ±1°C (-59°C to +20°C)	-50°C to +90°C (Single Stage) -60°C to +90°C (Dual Stage) ±0.2°C ±0.15°C Optional	-60°C to +20°C (INT) -50°C to +20°C (REM)† † Climatic version to +85°C ±0.1°C	-85°C to +20°C (RS) -100°C to +20°C (TRS) ±0.1°C
SENSOR	Thin film Ceramic Interchangeable	Thin film Ceramic Interchangeable	Thin film Ceramic Interchangeable	Thin film Ceramic Interchangeable	Thin film Ceramic Interchangeable	1 or 2 Stage Optical (Chilled Mirror)	3 Stage Optical (Chilled Mirror)	3 Stage Optical (Chilled Mirror) Aux. Cooling
CONFIG. LOCATION	Built-In	Built-In Remote (optional)	Remote	Built-in	Remote	Built-in or remote	Built-In (INT) Remote (REM)	Built-In
OPERATING PRESSURE	Portable	Portable	Transmitter	Sensor block with VCR ½" VCR (Sensor version)	Bench or panel	Wall mount, remote, probe or bench type	Bench or 19" rack	Bench or 19" rack
OPERATING TEMPERATURE	-20°C to +50°C	-20°C to +50°C (-20°C to +40°C compensated)	-40°C to +60°C	-40°C to +60°C -20°C to +60°C (I.S.) (-20°C to +40°C compensated)	-40°C to +60°C -20°C to +60°C (I.S.) (-20°C to +40°C compensated)	Sensor: -40°C to +90°C† Electronics: -20°C to +50°C †HT sensor to +115°C	Sensor: -20°C to +50°C (INT) -30°C to +30°C (REM) Electronics: -20°C to +50°C	Sensor: +10°C to +30°C Electronics: -20°C to +50°C
DISPLAY UNITS	Digital, °C, °F	Digital, °C, °F, K, PPMV, PPMW (air, H, N, CO, natural gas), %RH, #/MMSCF, g/m	None	None	Digital, °C, °F, PPMV, #/MMSCF, g/m³	°C, °F, %RH g/m, g/kg	°C, °F, PPMV, PPBV, PPMW, %RH, g/m, g/kg, KPa °C, °F Temperature	°C, °F, PPMV, PPBV, PPMW, %RH, g/m, g/kg, KPa °C, °F Temperature
OUTPUT	4-20mA	RS232 10,000 data logging points	4-20mA	4-20mA or RS485 4-20 mA (I.S.)	0-10VDC or 4-20mA	4-20mA, 0-20 mA, RS232 and RS-485	4-20mA, mV/°C RS232	4-20mA, mV/°C RS232
ALARM RELAY	None	None	None	None	Two 10A at 240VAC or 8A at 24 VDC	One 0.5A at 120 VAC 2A at 30 VDC	None	None
OPTIONS	None	Carrying case External transducer Sampling system	Digital display Power supply Sampling system	Digital display Power supply Sampling system	NEMA enclosures Second process input RS232/RS485 Sampling system	Sintered guard Membrane guard Weatherproof cable assembly	Pressure Transducer Sampling system RS485	Pressure Transducer Sampling system RS485
WEIGHT	8.8 lbs.	6.6 lbs.	0.3 lbs.	1.0 lbs. 0.4 lbs. (Sensor version) 3.1 lbs. (I.S.)	2.0 lbs. 4.5 lbs. (I.S.)	Wall Mount: 7 lbs. Remote Sensor: 8 lbs Probe Type: 13.5 lbs. Bench Mount: 6.5 lbs.	21.6 lbs. (INT) Sensor: 10.6 lbs. (REM) Monitor: 18.7 lbs. (REM)	86 lbs. (RS) 183 lbs. (TRS)
POWER	Battery or 115 VAC	Battery or 115/220VAC	12-28 VDC	12-28 VDC	115/220VAC 50/60Hz 18-36 VAC (optional) 9-60 VDC (optional)	90-264 VAC 47-440 Hz, 20 Watts	90-264 VAC 47-440 Hz	90-264 VAC 50/60 Hz
DIMENSIONS SENSOR MONITOR L x Dia H x W x D	10.8" x 4.9" x 9.9"	6" x 9.9" x 11.9"	— 5.4" x 1.23" x 1.06"	4.72" x 1.38" x 5.97" 6.06" x 3.38" x 7.0" (I.S.) 5.24" x 1.23" (Sensor version)	1.9" x 3.8" x 5.7" 5.4" x 1.3" 7.0" x 5.5" (I.S.)	Wall Mount: 14.5" x 9" x 4" Remote: 9" x 9" x 4" Probe Type: 18.4" x 10" x 22.7" Bench Mount: 4" x 11.5" x 10.3" Sensor: 5" x 1.8"	5.5" x 19" x 17" (INT) (includes sensor) 5.25" x 10.5" x 8.5" (REM) 5.5" x 19" x 17" (REM) (H x W x D)	16" x 19" x 20" (RS) 34" x 22" x 24" (TRS) (includes sensor)

STANDARD AND CUSTOM CALIBRATION EQUIPMENT ALSO AVAILABLE

\* INTRINSICALLY SAFE VERSIONS AVAILABLE;

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