

PURA

High Purity Gas Dewpoint Transmitter

An economical transmitter equipped with VCR fittings for measurement of dewpoint in high purity gases.

- Simple installation and operation
- High accuracy and repeatability
- Dewpoint range to $-120^{\circ}\text{C}/-184^{\circ}\text{F}/<1\text{ppbv}$
- High integrity $1/4$ inch male VCR fittings
- Fast Response
- 4-20 mA (standard) and RS485 (optional) output

Simple Operation

The Pura is designed to measure dewpoints in high and ultra-high purity gases. Equipped with $1/4$ inch VCR fittings, the Pura maintains the integrity of your process while providing the most accurate capacitive dewpoint measurement currently available.

The Pura is fully self-contained with integrated sensor and electronics. It is extremely easy to use with its $1/4$ inch male VCR gas connection ports configured to fit into a standard mass flow controller footprint. A 3-wire transmitter, Pura operates from a 12-28 VDC power source (maximum 25 mA) and provides a 4-20 mA linear, analog output or optional RS485 output proportional to dewpoint.

Fast Response

The Pura has been designed to respond quickly and accurately to changes in moisture level. The sensor provides a minimum flow path, reduced internal surface area, and contains no unnecessary sampling volume. Add to this the inherently fast response of the Kahn Advanced Ceramic Moisture Sensor and the result is a fast and precise measurement of process dewpoint.

Pura's sensor housing is fabricated from cold drawn stainless steel with an internal $0.25\text{ Ra }\mu\text{m}$ electro-polished finish for minimal moisture adsorption and cleaned to oxygen standards. The $1/4$ inch male VCR gas connection ports are supplied capped for cleanliness. Pura is delivered cleaned and double bagged to Class 100 clean room standards in a pure inert gas sealed environment (Pura Premium model).

The sensor body seal is rated to 10^{-9} torr while the entire system will handle pressure up to the VCR coupling rated maximum of 24 MPa (3,500 PSIG).



High Accuracy and Repeatability

The proprietary design of the Kahn Advanced Ceramic Moisture Sensor, combined with sensitive and stable electronics, provides high accuracy and excellent repeatability. With a standard dewpoint measurement range from -120 to -40°C , Pura offers measurement accuracy of:

- $\pm 1^{\circ}\text{C}$ dewpoint from -40 to -60°C dewpoint
- $\pm 2^{\circ}\text{C}$ dewpoint from -61 to -100°C dewpoint
- $\pm 4^{\circ}\text{C}$ dewpoint from -101 to -120°C Dewpoint

Pura is shipped ready to use, calibrated precisely at 10°C dewpoint intervals across its measurement range against transfer standards traceable to NIST. It has been developed for and tested by the semiconductor industry to measure trace moisture in the high purity gases used in the processing of silicon wafers in a semiconductor fabrication plant.

Special Features

Pura offers special features adjustable in the field. The 4-20 mA output can be user set over any part of the operating range, with a minimum output span of 1°C . Also, the factory pre-set failure modes, providing over-range, under-range and sensor fault conditions, can also be easily re-set to suit your own application and system needs. Adjustment of all these parameters is achieved through a simple PC-based user interface, supplied free of charge.

Models

Pura Premium

- Stainless Steel Construction
- 0.25 Ra μm electro-polished surface finish
- Double bagged

Pura OEM

- Stainless Steel Construction
- 0.25 Ra μm electro-polished surface finish
- Single bagged

Pura Sensor

- Same as Pura OEM but without flow through sensor housing
- Probe configuration with $1/2$ inch VCR
- Single bagged

SPECIFICATIONS

Measurement Range:

Dewpoint: -120 to -40°C
(Calibrated from: -100 to -40°C)

Accuracy:

$\pm 1^{\circ}\text{C}$ from -40 to -60°C dewpoint
 $\pm 2^{\circ}\text{C}$ from -61 to -100°C dewpoint
 $\pm 4^{\circ}\text{C}$ from -101 to -120°C dewpoint
(estimated)

Resolution:

Dewpoint:

- 0.1°C from -40 to -79.9°C
- 1°C from -80 to -100°C
- 1 to 3°C from -101 to -120°C

Sensor Block:

Cold Drawn Stainless Steel
0.25 Ra μm electro-polished
internal finish

Sensor:

Kahn Advanced Ceramic Moisture
Sensor

Gas Connection:

$1/4$ inch Male VCR Fittings (Premium and
OEM versions)

Power Requirement:

12-28 VDC

Operating Pressure:

10^{-9} torr minimum;
24 MPa (3500 PSIG) maximum

Operating Temperature:

-40 to $+60^{\circ}\text{C}$; -20 to $+40^{\circ}\text{C}$ temperature
compensated

Outputs:

4-20 mA with 500 ohms compliance at
24V, minimum 200 ohms at 12V.
Maximum cable length 1600 feet;
Optional RS485 text output with
corresponding maximum cable length
of 4000 feet.

Output range:

4-20 mA output adjustable from 1 to
 80°C span using interface software.

Output Error Status:

Standard output error conditions as
supplied:
23 mA = sensor fault; 20 mA = over
range; 4 mA = under range. These
settings are adjustable using the
interface software.

Installation Profile:

Premium and OEM versions: 4.73 inch
pitch, drop in across gas port face
seals. Zero tubing clearance required.
Quantity 2 M4 x 0.028, 0.28 inch deep
mounting holes in block, diagonally
opposed at 0.79 x 0.79 inch pitch.

Pura Sensor version: Fits into user's $1/2$
inch VCR configured port.

Flow Rate:

2-10 SCFH (1 to 5 l/min)

Overall Dimensions:

Premium and OEM versions:
4.72 x 1.38 x 5.97 inches.
Pura Sensor version:
5.24 x 1.23 diameter inches

Weight:

Premium and OEM versions: 1 lb.
Pura Sensor version: 0.4 lb.

Packaging:

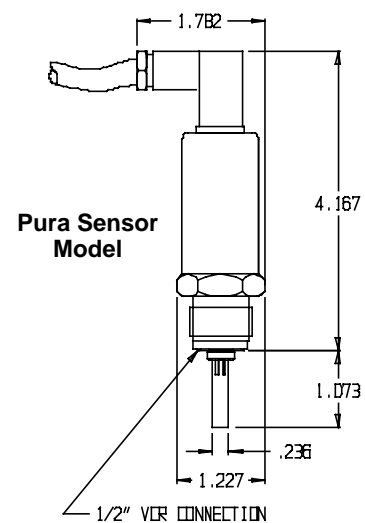
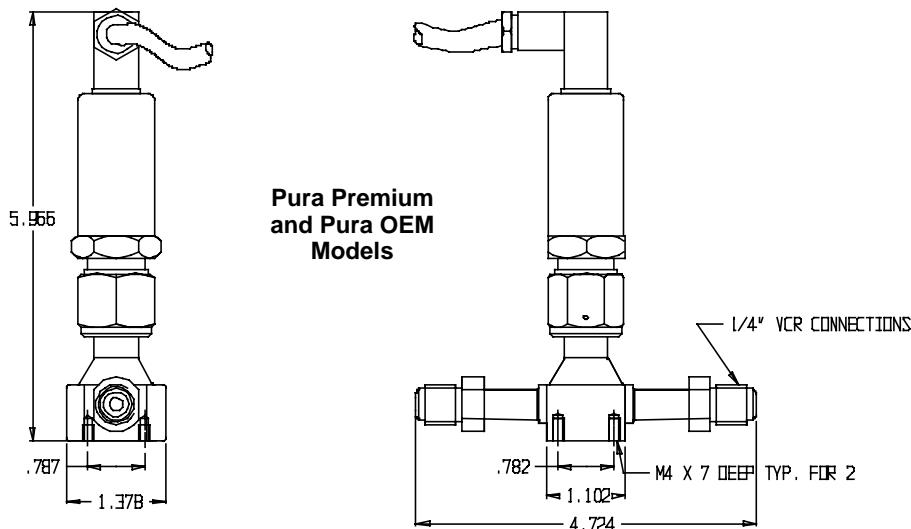
Pura Premium: Double bagged and
sealed in UHP inert gas.
Pura OEM and Pura Sensor: Single
bagged in 1000 gauge polyethylene.
All options: Shipped individually in
foam protection and carton.
Supplied with protective steel guard
over sensor surface for transportation
and handling.

Traceable Certification:

-75 to $+20^{\circ}\text{C}$ dewpoint traceable to NIST.
For dewpoints $< -75^{\circ}\text{C}$: Direct reference
to a fundamental optical hygrometer.

Options:

- Display unit
- Power supply module
- Intrinsically safe version



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.

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KAHN

KAHN INSTRUMENTS, INC.

885 Wells Road, Wethersfield, CT 06109

(860) 529-8643 Fax: (860) 529-1895 www.kahn.com hygros@kahn.com