

SF82

Dewpoint Transmitter

A low cost, 2-wire, rugged dewpoint transmitter for continuous measurement of the moisture content of compressed air or process gas focused on wetter dewpoint environments.

- -76°F to +140°F (-60°C to +60°C) dewpoint range
- 0 to 24,000 PPMv moisture content
- 2-wire loop powered configuration
- 6.5 to 28 VDC operation
- Linear 4-20 mA signal (standard)
- MODBUS RTU digital output (optional)
- Mini DIN 43650C (standard)
- M12 electrical connector (optional)
- NIST traceable

Simple and Economical

The NIST traceable SF82 Dewpoint Transmitter makes monitoring dewpoint as easy as measuring temperature or pressure, and can be instantly incorporated into your air or gas measurement and control system. The SF82 Dewpoint Transmitter is also economical to purchase, install and maintain.

Both installation and operating costs are minimal because of the transmitter's ruggedness, reliability and simplicity. Only periodic recalibration is required to maintain calibration accuracy.

Broadcast Range

Powered by any DC power source from 6.5 to 28 volts, the SF82 Dewpoint Transmitter features a broad calibrated dewpoint range (-76°F to +140°F) allowing wetter dewpoints above 68°F to be easily measured. Flow rate is not critical to measurement accuracy, though speed of response will be improved by operating at higher sample flow. In the unlikely event that something goes wrong, the embedded microprocessor provides intelligent information on the failure mode. Sensor fault, under range and over-range conditions are all signaled by predetermined output levels, so you can easily establish the source of the problem, correct it and get back to operation quickly.



Advanced Thick Film Technology

The key to the SF82 Dewpoint Transmitter's performance is its sensor technology. Kahn's superior thick film moisture sensor is coupled with advanced digital measurement circuitry to produce a fully calibrated and interchangeable dewpoint transmitter. All calibration data is stored within the transmitter memory so that calibration exchange or service can be accomplished in seconds, even by untrained personnel. The SF82 Dewpoint Transmitter is simply disconnected and then removed from its sample block and replaced by a new, fully calibrated unit.

Air and Gas Quality Measurement

The SF82 Dewpoint Transmitter calibration is traceable to NIST at nine points over the range from -76°F to +68°F dewpoint to an accuracy of $\pm 3.6^\circ\text{F}$ dew point. The inherent stability of our advanced polymer moisture sensor means the SF82 Dewpoint Transmitter will provide years of reliable operation with only the need for periodic calibration to maintain traceability vital for conformance with your own quality standards. The SF82 Dewpoint Transmitter is also fast to respond, insuring that your process is always monitored in real time.

What is Dewpoint?

Dewpoint is defined as the temperature at which the water vapor pressure of a gas equals its 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 and/or parts per million. It is a very convenient measure of actual water content of a gas because, unlike relative humidity, it is not a function of temperature.

Calibration

The Kahn SF82 Dewpoint Transmitter is factory calibrated to insure consistent, accurate readings. The calibration of all Kahn ceramic, polymer 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 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.

Installation

The sensor can be installed directly in the main gas line or in a sample stream.

SF82 Digital Option

- Modbus RTU over RS485
- 6.1" overall length
- 4-20 mA output
- IP65 / NEMA 12

SPECIFICATIONS

Sensor Type:

Kahn Advanced Polymer moisture sensor

Measurement Range:

-76°F to +140°F (-60°C to +60°C) dewpoint
0 to 24,000 PPMv moisture content

Accuracy:

±3.6°F (±2°C) dewpoint

Power Supply:

6.5-28 VDC reverse polarity protected
Optional 5-28 VDC for digital version

Output:

4-20 mA linear, current source configurable over the entire measurement range
Optional Modbus RTU (see SF82 digital option above)

Operating Temperature:

-4°F to +140°F (-20°C to +60°C)

Operating Pressure:

Vacuum to 1450 PSIG

Temperature Compensated:

From -4°F to +122°F (-20°C to +50°C)

Flow Rate:

2 to 10 SCFH (1 to 5 l/min) mounted in sampling block;
0 to 33 ft/sec (0 to 10 m/sec) velocity when inserted directly

Connection:

2-wire loop powered DIN-style with screw terminal contacts

Traceable Certification:

-76°F to +68°F (-60°C to +20°C)
dewpoint traceable to NIST.

Certifications:

North American NRTL 61010 approvals
EN61373 railway rolling stock
EN50121-3-2 railway EMC/RFI
CE Certified

Environmental Protection:

IP66/NEMA 4
10µ HMWPE Guard (standard)
80µ Stainless Steel Sintered Guard (optional)

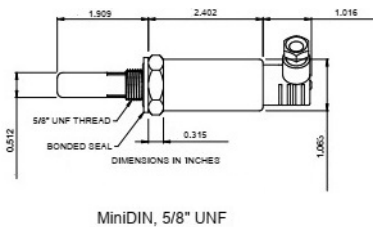
Weight:

0.33 pounds (0.15 kg)

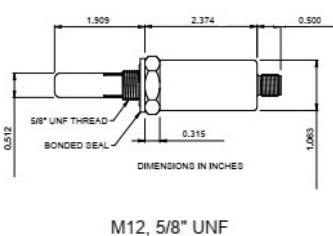
Electrical Connectors and Cable

Mini DIN 43650C connector (standard)
M12 connector (optional)
2.5, 6, 16 or 33 foot cable (optional)

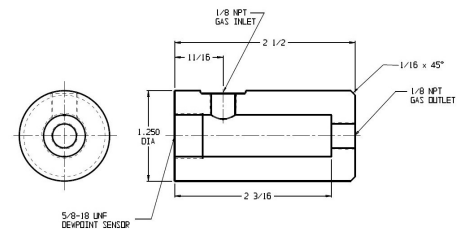
SF82 Analog



SF82 Digital



Sample Block



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.

Number 0520 SF82 Printed in USA

KAHN

KAHN INSTRUMENTS, INC.

885 Wells Road, Wethersfield, CT 06109
(860) 529-8643 Fax: (860) 529-1895 www.kahn.com hygros@kahn.com