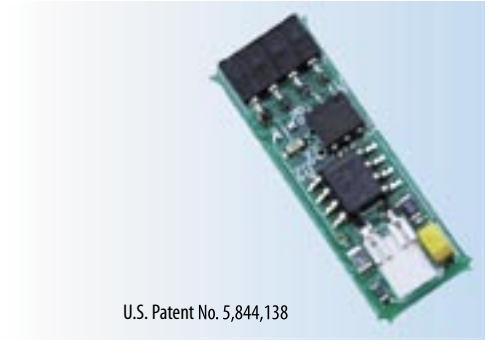


U.S. Patent No. 5,844,138

HS Series

Replaceable Humidity Element For Veris Sensors

Veris humidity sensors are calibrated in a high accuracy, NIST traceable, humidity generator. Each sensor is digitally calibrated at four different relative humidity levels over an eight-hour period. Calibration data is programmed into the replaceable sensing element, which features thin-film capacitive technology for superior accuracy and exceptional resistance to contaminants. This computer- controlled digital calibration eliminates errors associated with manual "trimming."

NIST traceable models are verified at eight different relative humidity levels. A computerized data logger continuously monitors sensor outputs during the verification period. A plot of the actual sensor output during the verification period, and worst-case error for each point are printed on a serialized, printed certificate conforming to ANSI/NCSL Z540-1 1994 (see facing page).

Veris' calibration system produces known humidity values using the fundamental principle of the "two pressure" generator developed by NIST (H-4622). This system is capable of continuously supplying accurate humidity values for instrument calibration, evaluation, and verification.

The two-pressure method involves saturating air with water vapor at a given pressure and temperature. Saturated gas then flows through an expansion valve where it is isothermally reduced to chamber pressure. Gas temperature is held constant during pressure reduction, so relative humidity at chamber pressure may then be calculated as the ratio of two absolute pressures.

Temperature uniformity in the chamber is maintained by circulating a temperature controlled fluid through a shell surrounding the test space. Highly accurate pressure measurements are made using NIST traceable piezoresistive transducers. The resulting system accuracy is better than 0.5% RH over all ranges and temperatures.

ORDERING INFORMATION

	(Accuracy)	*(NIST)*	*(Conformal Coating)*
HS	☐	☐	☐
	1 = 1% **2** = 2% **3** = 3% **5** = 5%	**N** = NIST **X** = None	**C** = Conformal Coating **X** = None

Example:

HS [5] [X] [C]

Certificate of Calibration

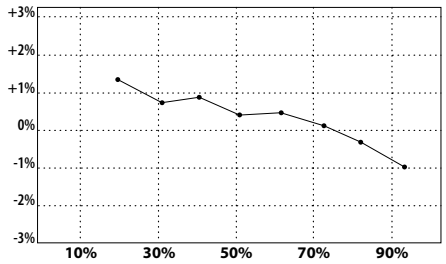
HS Digital Humidity Sensor

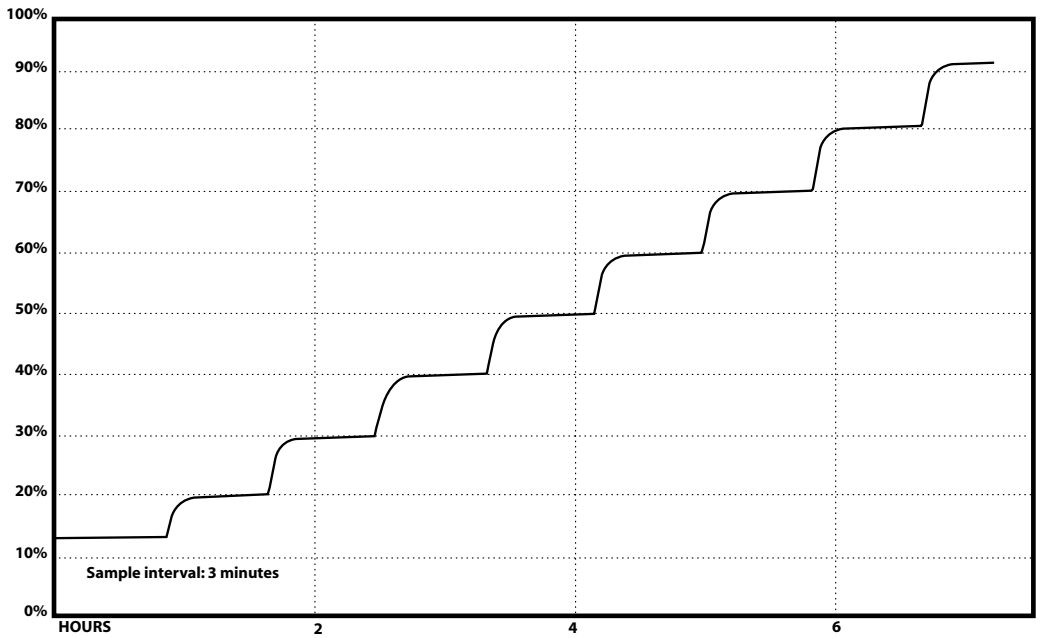
Serial Number: SAMPLE **Date:** _____ **Accepted by:** _____

This digital sensor has been computer profiled and calibrated at multiple relative humidity levels using standards traceable to the National Institute of Standards and Technology through test #H-4622.

The humidity standard produces an atmosphere of known humidity based on the "two-pressure" principal which is to saturate an air stream with water vapor at a given pressure and temperature. The saturated air stream is then reduced to test pressure. The humidity at test pressure is then the ratio of the two absolute pressures, corrected for vapor pressure and enhancement factor ratios.

Reference	Reading	Difference
12.0%	12.53%	+0.53%
20.0%	20.44%	+0.44%
30.0%	29.94%	+0.06%
40.0%	40.12%	+0.12%
50.0%	49.80%	+0.20%
60.0%	59.98%	-0.02%
70.0%	69.84%	-0.16%
80.0%	79.43%	-0.57%
90.0%	88.80%	-1.20%





Veris Industries certifies this calibration to be in compliance with ANSI/NCSL Z540-1 1994

VERIS INDUSTRIES, INC.
1-800-354-8556

