NIST-Traceable Sensors

All Davis Weather Stations and Sensors are carefully manufactured in our California factory in accordance with a quality management system certified by Perry Johnson Registrars, Inc. to be compliant to ISO 9001:2015 standards. Each unit is individually tested for accuracy, consistency and overall product quality. However, additional testing and verification of specific sensors, called NIST-Traceable Certification, may be required for some users.

What is NIST?

In the US, the National Institute of Standards and Technology (NIST) develops and maintains the standards of measurement to which all others are ultimately traced. Numerous calibrations, tests and measurement assurance programs are delivered directly to approximately 10,000 companies. From these companies, NIST-traceable intermediate service providers are the next link in a network that joins together the makers and users of precision instruments.

A NIST-traceable certificate verifies that the unit has been compared to a NIST-traceable reference standard and that it is accurate within stated specifications. It also shows the range of conditions under which the instrument was tested, the date the test was performed and the expiration date of the certification (usually one year from the test date).

Davis NIST-traceable sensors include:

Relative Humidity:	Inside and outside humidity sensors are tested in a humidity and temperature-controlled chamber. The results are verified in comparison with a Vaisala HMP-333 Humidity Sensor. Humidity is compared to several check points.
Temperature:	Inside and outside temperature sensors are tested in a temperature-controlled chamber at several different temperatures. The results are verified against a Vaisala HMP-333 Temperature Sensor.
Barometric Pressure:	Barometric Pressure is tested at several different pressures and verified in comparison to a Vaisala PTB-220A Digital Barometer.
Wind Speed:	Wind cups are tested in a subsonic wind tunnel operating up to approximately 75 mph (33,5 m/s or 121 kph) and verified at various speeds in comparison to a MKS Baratron 223B Pressure Transducer (Electronic Pitot Tube).
Rainfall:	The rain sensor is tested and verified in comparison to a CAVRO XLP 6000 Modular Digital Pump.

NIST-traceable certification is available for the following Vantage Vue sensors only:

- **Inside humidity**
- **Inside temperature**
- **Barometric pressure**

See reverse side for detailed NIST-Traceable Standards Methodology and Accuracy chart.

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NIST-Traceable Methodology and Standard Accuracy

SENSOR	STANDARD'S CALIBRATED ACCURACY	SENSOR'S CHECKED & VERIFIED ACCURACY	CHECK POINTS
Inside Humidity	± 1% RH at 33% RH and 80% RH, ± 2% at 90% RH	± 2% RH between 33% RH and 90% RH	33% RH, 80% RH and 90% RH
Outside Humidity			
Inside Temperature	± 0.4°F (0,2°C)	± 0.5°F (0,3°C) between +32°F and +140°F (0°C and +60°C)	40°F, 60°F, 80°F, 100°F and 140°F (4°C, 15°C, 27°C, 38°C and 60°C)
Outside Temperature		± 0.5°F (0,3°C) between -40°F and +140°F (-40°C and +60°C)	-40°F, -15°F, 0°F, 40°F, 80°F and 140°F (-40°C, -26°C, -18°C, 4°C, 27°C and 60°C)
Barometric Pressure, Vantage Pro2 and Vantage Vue	±0.003"Hg (0,1 hPa)	± 0.03" Hg (1,0 hPa) between 20" Hg and 30" Hg (677 hPa and 1016 hPa)	20.00" Hg, 22.25" Hg, 25.00 Hg, 27.75 Hg and 30.00" Hg) (677 hPa, 753 hPa, 847 hPa, 940 hPa and 1016 hPa)
Wind Speed	± 2 mph (0,9 m/s)	± 2 mph (0,9 m/s) below 40 mph (18,0 m/s) ± 5% above 40 mph (18,0 m/s)	6, 12, 25, 40 and 75 mph (2,7; 5,4; 11,2; 18,0 and 33,5 m/s)
Rain, 0.01"	± 0,07 ml = ± 0.001" (0,003 mm) rain = 1/100 tip	± 4% + 1 tip (rain rate of up to 4"/hr)	1.00" total rain at rate of 2.21"/hr
Rain, 0,2 mm		± 4% + 1 tip (rain rate of up to 100 mm/hr)	25,4 mm total rain at rate of 56 mm/hr

More information on the National Institute of Standards and Technology can be found on its website at www.nist.gov.

A chart showing complete sensor accuracy, resolution and range of all Davis Weather Station sensors can be found on the Davis website at www.davisinstruments.com/station_sensors_specs.

For any other information or questions, please contact us at (510) 732-9229 or at sales@davisinstruments.com.