Relative humidity sensor

SPECIFICATIONS

Sensor Type: Active polymer dielectric
Range: 0-100%
Hysteresis: 0.5%
Response Time: Two seconds for 90% change
Accuracy: +/-2% over range
Temperature Range: -30°C to +80°C
Calibration Method: Multi-point calibration with temperature compensation
Measurement Units: Percentage (%) relative humidity
Resolution Standard: 0.1%
Resolution High: 0.01%
Output: Serial data ASCII format, plus either voltage 0-1 or 0-2.5V, or frequency +5V pulse (2-10Hz)
Options: 4-20mA

Power requirements:

Power Supply: 5-28V DC unregulated
Current Drain: 2mA nominal

Cable lengths:

Standard cable length is 0.8m
Maximum cable length 4km using Monibus communications

Mounting:

Mounts in SS4 shelter, airflow should not be obstructed. Note: The HU1 sensor is not recommended for monitoring where relative humidity is continuously above 95%, a wet and dry bulb measurement using an aspirated shelter should instead be used

Sensor dimensions:

Length: 165mm (overall)
Diameter: 24mm
Weight: 120g (unpacked)

Related products:

EnviroStation™ Automatic Weather Station
SS4 Sensor Shelter (radiation shield)
SS6 Aspirated Sensor Shelter
TA1 Air Temperature Sensor
TA2 Wet and Dry Bulb Temperature Sensor

DocRef: Ver1.3

The new “smart” HU1 Relative Humidity Sensor by ICT International utilises an active polymer capacitor as a sensing element to provide reliable readings of relative humidity with minimum maintenance.

The dielectric constant of the element surface changes with the absorption of atmospheric moisture. The absorbed moisture causes a change in capacitance that is detected and converted to a relative humidity reading.

The sensing element is connected to a fully temperature-compensated microprocessor-controlled electronics package, providing output in 0.01 per cent relative humidity steps under standard mode.

The use of a microprocessor provides 16-bit resolution (1 part in 65,000), software switchable output signals, plus control and alarm outputs. Each unit is factory calibrated and supplied with a multi-point calibration curve for maximum accuracy across the full 0-100 per cent range.

With most systems, changeover of a sensor requires either re-calibration of the system or resetting/reprogramming of parameters in the data logger. The HU1 “smart” sensor eliminates this problem as the on-board microprocessor ensures all HU1 sensors exhibit the same electronic specifications and therefore, identical performance.

Superior reliability

HU1 sensors conform to a global algorithm in all output modes for operation in digital, voltage or current mode, and all sensors are supplied with individual calibration certificates to enable software conversion to engineering units. In serial mode, sensors report in engineering units and the global algorithm is implemented internally.

In conditions where relative humidity exceeds 90 per cent, readings may vary significantly as relatively minor changes in temperature cause condensation on the sensor. Readings in excess of 100 per cent may occur. Once moisture has evaporated from the surface of the sensor reliable measurements will quickly be established and “recovery time” is usually less than one hour.

The HU1 has a robust design incorporating a stainless-steel body. A sintered bronze filter is used for ease of maintenance and protects the sensor from insects and airborne debris.

Applications

- Horticulture and greenhouses
- Agriculture and forestry
- Microclimate studies
- Crop studies
- Pest and disease management
- Animal and human comfort
- Process control

Features

- Low maintenance
- Rapid response
- Stainless-steel body
- Robust design
- High-speed version available
- Low power consumption

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