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SC-600
RESISTIVE RELATIVE HUMIDITY
SENSOR AND SIGNAL CONDITIONING CIRCUIT
APPLICATION NOTES

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SC-600 SENSOR PRECAUTIONS

Condensation, Fog, Mist or Liquid Water:

The polymer coating on the sensor used on the SC-600 allows it to be exposed to condensation with recovery after the sensor dries out. The dry out period may take several minutes; however, there will not be a permanent shift in the impedance. Air movement facilitates faster dry out. Immersion in water or any other liquid is not recommended.

Temperature Limits:

The operating temperature limit for the SC-600 is 32°F to +122°F.

Chemical Vapors:

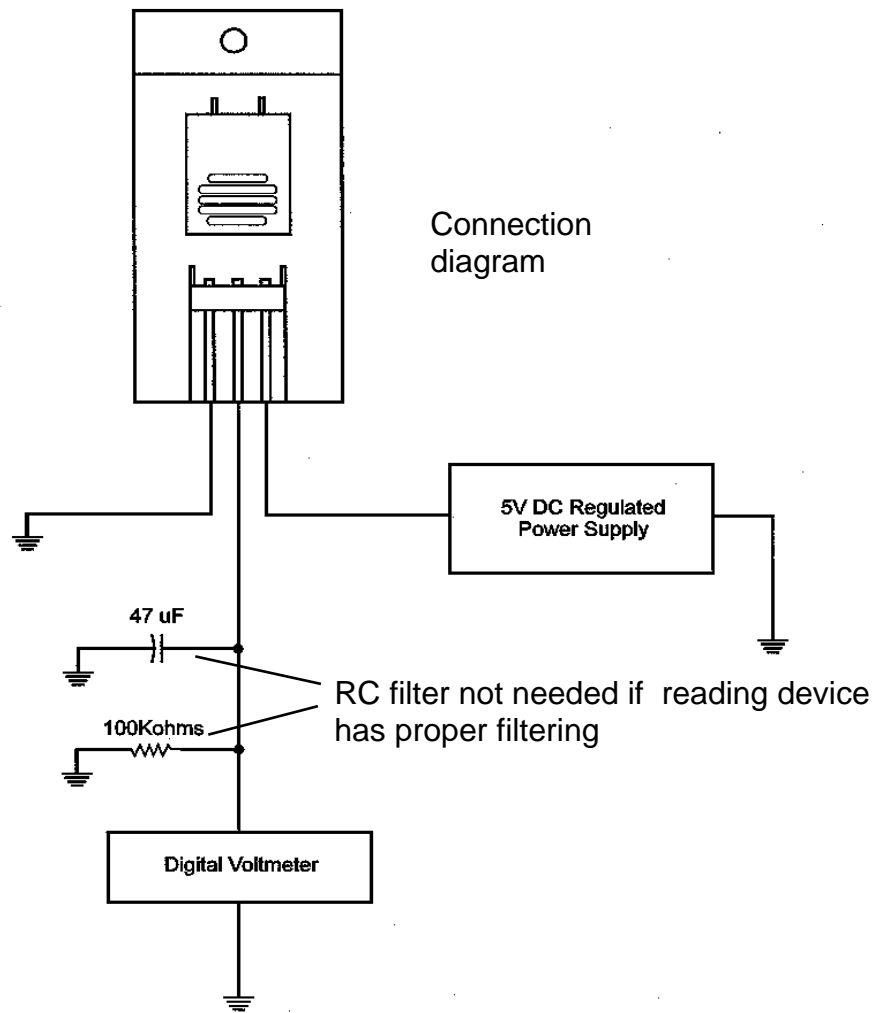
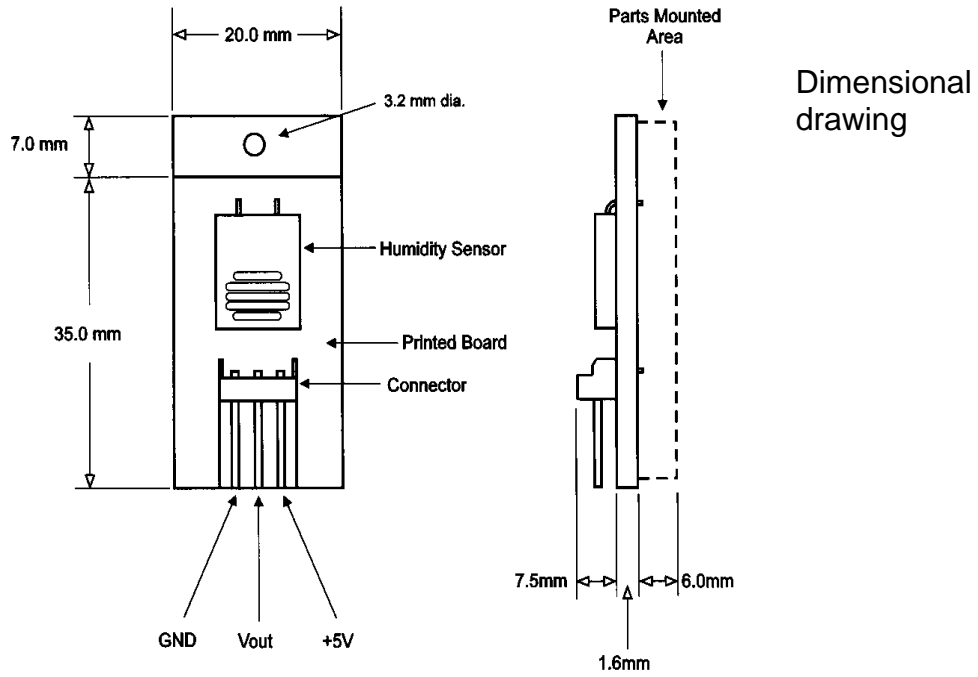
Alcohols and other polar compounds typically cause a temporary shift. Reactive chemicals such as sulfides, halogens, mercury vapor, acids and ketones should be avoided. Hydrocarbons or oil mist tend to condense as a varnish which slows the response time of the sensor.

Physical Contaminants:

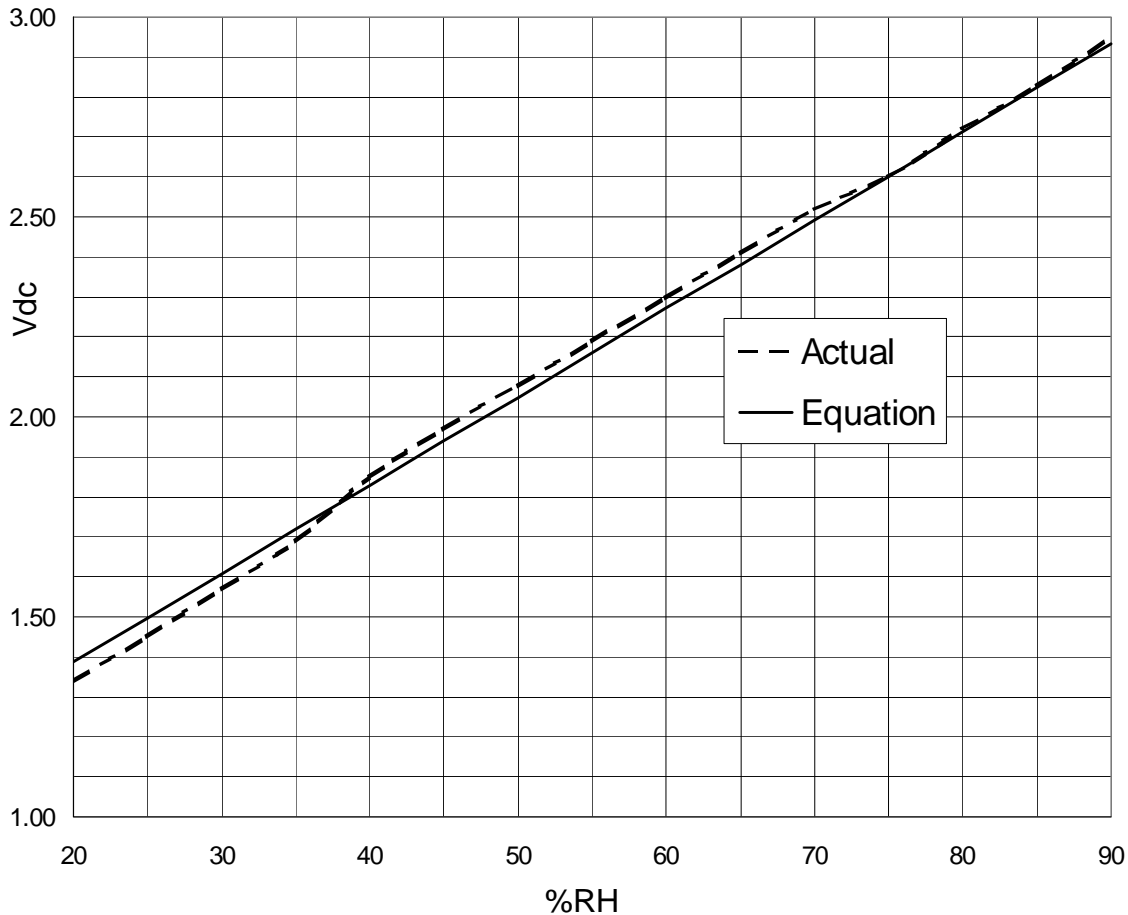
When used in environments with dust and oil mist, a filter must be utilized. High absolute vacuum should be avoided.

SPECIFICATIONS

Range	20- 90% RH
Set Point Accuracy	± 2 %RH
Output Signal	1- 3 Vdc
Operating Temperature	32 to +122 °F
Response Time	15 Seconds for 63% Step Change
Hysteresis	< 0.2%
Long-Term Drift	< 2% RH/5 Years
Sensor Excitation	150 mV @ 440 Hz
Power	5 Vdc, (Regulated), current < 1.5 mA max.
Output Filter	100 KΩ /47μF RC filter
Dimensions	20 x 42 x 17mm



Vdc vs %RH @ 25°C (77°F)



Output Equations

$V_{dc} = (.0221 \times \%RH) + 0.945$ If the temperature is not 25°C (77°F) the temperature compensation equation should be included to correct the %RH value before calculating the Voltage Output Equation.

$\%RH = 45.25 V - 42.76$ If the temperature is not 25°C (77°F) the temperature compensation equation should be performed on the answer to the %RH Output Equation.

Temperature Compensation

The average coefficient for temperature compensation of the UPS-600 sensor works out to -0.7% RH/ °C (-0.4% RH/ °F). The correction factor is computed with the expression:

$$C = -0.7(T-25)$$

C = the correction factor in percent to be algebraically added.

T = the temperature in °C.

$$C = -0.4(T-77)$$

C = the correction factor in percent to be algebraically added.

T = the temperature in °F.