





# Air Temperature and Relative Humidity Sensors

Typically capacitive RH chips and PRTs



Air temperature and relative humidity sensors typically consist of two separate sensors packaged in the same housing. Often relative humidity is measured with a capacitive RH sensor, while air temperature is measured by a PRT.

|  | Sensing Element                       | Measurement Range  | Accuracy  | Field-Replaceable Chip or Recalibrate |
|--|---------------------------------------|--|---|---------------------------------------|
| <p><b>HygroVUE10</b><br/>Digital Temperature and Relative Humidity Sensor with M12 Connector</p> <p><b>Popular</b></p>  | SHT35 modified by Campbell Scientific | <ul style="list-style-type: none"> <li>➤ Relative Humidity: 0 to 100% RH</li> <li>➤ Air Temperature: -40°C to +70°C</li> </ul> | <ul style="list-style-type: none"> <li>➤ Air Temperature: ±0.1°C (over the range -20 to +60°C)</li> <li>➤ Relative Humidity: <i>-NOTE- The accuracy figures quoted are the 95% confidence limits relative to factory standards.</i></li> <li>➤ Relative Humidity: ±1.5% (at 25°C, over the range 0 to 80% RH)</li> <li>➤ Relative Humidity: ±2% (at 25°C, over the range 80 to 100% RH)</li> <li>➤ Air Temperature: ±0.2°C (over the range -40 to +70°C)</li> </ul> | Field-replaceable chip                |


|   | <i>Sensing Element</i>                              | <i>Measurement Range</i>   | <i>Accuracy</i>  | <i>Field-Replaceable Chip or Recalibrate</i> |
|---|---|--|--|--|
| <p><b>HygroVUE5</b><br/>Digital Temperature and Relative Humidity Sensor</p>  <p>Popular</p> | SHT35 derivative (specially coated for reliability) | <ul style="list-style-type: none"> <li>➤ Air Temperature: -40 to +70°C</li> <li>➤ Relative Humidity: 0 to 100% RH</li> </ul> | <ul style="list-style-type: none"> <li>➤ Relative Humidity: ±3% (at 25°C, over the range 80 to 100% RH)</li> <li>➤ Air Temperature: ±0.4°C (over the range -40 to +70°C)</li> <li>➤ Relative Humidity: ±1.8% (at 25°C, over the range 0 to 80% RH)</li> <li>➤ Air Temperature: ±0.3°C (over the range -20 to +60°C)</li> </ul> | Field-replaceable chip                       |


**EE181-L**  
Air Temperature and  
Relative Humidity Sensor

Popular



|  | <i>Sensing Element</i>  | <i>Measurement Range</i>   | <i>Accuracy</i>  | <i>Field-Replaceable Chip or Recalibrate</i> |
|--|---|--|--|--|
|  | <ul style="list-style-type: none"> <li>➤ Relative Humidity: Capacitance</li> <li>➤ Air Temperature: 1000 Ω Platinum Resistance Thermometer (PRT)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Relative Humidity: 0 to 100% RH (non-condensing)</li> <li>➤ Air Temperature: -40° to +60°C</li> </ul> | <ul style="list-style-type: none"> <li>➤ Relative Humidity: <math>\pm (1.4 + 0.01 \cdot \text{RH reading})</math> % RH (at -25° to +60°C)</li> <li>➤ Relative Humidity: <math>\pm(1.3 + 0.003 \cdot \text{RH reading})</math> % RH (at -15° to +40°C, 0 to 90% RH)</li> <li>➤ Air Temperature: <math>\pm 0.2^\circ\text{C}</math> (at +23°C)</li> <li>➤ Relative Humidity: <math>\pm (1.5 + 0.015 \cdot \text{RH reading})</math> % RH (at -40° to +60°C)</li> <li>➤ Relative Humidity: <math>\pm 2.3\%</math> RH (at -15° to +40°C, 90 to 100% RH)</li> <li>➤ Relative Humidity: <i>-NOTE- Accuracy specifications include hysteresis, non-linearity, and repeatability.</i></li> </ul> | —  |

|   | <i>Sensing Element</i>   | <i>Measurement Range</i>   | <i>Accuracy</i>   | <i>Field-Replaceable Chip or Recalibrate</i> |
|---|--|--|---|--|
| <p><b>HMP155A-L</b><br/>Air Temperature and Relative Humidity Sensor</p>  | <ul style="list-style-type: none"> <li>➤ Relative Humidity: HUMICAP 180R</li> <li>➤ Air Temperature: PT 100 RTD 1/3 class B IEC 751</li> </ul> | <ul style="list-style-type: none"> <li>➤ Relative Humidity: 0 to 100% RH (non-condensing)</li> <li>➤ Air Temperature: -80° to +60°C</li> </ul> | <ul style="list-style-type: none"> <li>➤ Relative Humidity: <math>\pm(1.2 + 0.012 \times \text{reading})</math> % RH (at -40° to -20°C)</li> <li>➤ Air Temperature: <math>\pm(0.226 - 0.0028 \times \text{temperature})^\circ\text{C}</math> (-80° to +20°C)</li> <li>➤ Relative Humidity: <i>-NOTE- Accuracy specifications include non-linearity, hysteresis, and repeatability.</i></li> <li>➤ Relative Humidity: <math>\pm(1.4 + 0.032 \times \text{reading})</math> % RH (at -60° to -40°C)</li> <li>➤ Relative Humidity: <math>\pm 1.7\%</math> RH (at 15° to 25°C, 90 to 100% RH)</li> <li>➤ Relative Humidity: <math>\pm(1.0 + 0.008 \times \text{reading})</math> % RH (at -20° to +40°C)</li> <li>➤ Relative Humidity: <math>\pm 1\%</math> RH (at 15° to 25°C, 0 to 90% RH)</li> <li>➤ Air Temperature: <math>\pm(0.055 + 0.0057 \times \text{temperature})^\circ\text{C}</math> (+20° to +60°C)</li> <li>➤ Relative Humidity: <math>\pm (1.2 + 0.012 \times \text{reading})</math> % RH (at 40° to 60°C)</li> </ul> | Recalibrate                                  |

|  | <i>Sensing Element</i>   | <i>Measurement Range</i>   | <i>Accuracy</i>         | <i>Field-Replaceable Chip or Recalibrate</i> |
|--|--|--|-------------------------|--|
| <b>HMP60-L</b><br>Air Temperature and Relative Humidity Sensor  | <ul style="list-style-type: none"> <li>➤ Air Temperature: 1000 ohm Platinum Resistance Thermometer (PRT)</li> <li>➤ Relative Humidity: Vaisala's INTERCAP capacitive chip</li> </ul> | <ul style="list-style-type: none"> <li>➤ Air Temperature: -40° to +60°C</li> <li>➤ Relative Humidity: 0 to 100% RH (non-condensing)</li> </ul> | Air Temperature: ±0.6°C | Field-replaceable chip (RH only)             |

For comprehensive details, visit: [www.campbellsci.com/relative-humidity](http://www.campbellsci.com/relative-humidity) 

