HC2-S3-L
Temperature and Relative Humidity Sensor

Overview
The HC2-S3-L is a rugged, accurate temperature/RH probe that is ideal for long-term, unattended applications. It uses a Rotronic’s IN1 capacitive sensor to measure RH and a 100 Ω PRT to measure temperature. For optimum results, the HC2-S3-L should be recalibrated annually.

The HC2-S3-L comes with a polyethylene filter that protects its sensor from fine dust and particles and minimizes water absorption and retention. Alternatively, a Teflon filter is available for marine environments. The response time is slower when using the Teflon filter.

Benefits and Features
- Well-suited for long-term, unattended applications
- Accurate and rugged
- Compatible with all Campbell Scientific dataloggers (including the CR200(X) series)

Ordering Information

**Air Temperature and Relative Humidity Probe**

**HC2-S3-L** Rotronics Temperature/RH Probe with user-specified cable length. Enter cable length, in feet, after the -L; recommended cable lengths are shown on page 2. Maximum cable length is 1000 ft (300 m) with 12 V power, or 10 ft (3 m) with 5 V power.

**Accessories**

- **41003-X** 10-Plate R. M. Young Radiation Shield with U bolts for attachment to a Campbell Scientific crossarm or mast.
- **R41046DS-15** Sensor mounting adapter for the HC2-S3-L.
- **L27755** Teflon Filter for marine environments.

Sensor Mounts
When exposed to sunlight, the HC2-S3-L must be housed in a, 41003-X 10-plate, naturally aspirated radiation shield and secured with the R41046DS-15 adapter. The 41003-X attaches to a crossarm, mast, or user-supplied pipe with a 2.5 to 5.3 cm (1.0 to 2.1 in) outer diameter.
Recommended Cable Lengths

<table>
<thead>
<tr>
<th>2 m Height</th>
<th>Atop a tripod or tower via a 2 ft crossarm such as the CM202</th>
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</thead>
<tbody>
<tr>
<td>Mast/Leg</td>
<td>CM202</td>
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<tr>
<td>2.7 m (9 ft)</td>
<td>.3 m (11 ft)</td>
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</tbody>
</table>

Note: Add 1 m (2 ft) to the cable length if mounting the enclosure to the leg base of a CM106B, CM110, CM115, or CM120 tripod.

Specifications

- Electronics Operating Limits: -50° to +100°
- Storage Temperature: -50° to +100°C
- Diameter: 15 mm (0.6 in)
- Length without connector: 85 mm (3.3 in)
- Length with connector: 183 mm (7.25 in)
- Weight: 10 g (0.35 oz)
- Filter: Polyethylene (standard) or Teflon (optional)
- Current Consumption: < 4.3 mA @ 5 Vdc; < 2.0 mA @ 12 Vdc
- Supply Voltage: 5 to 24 Vdc
- Startup Time: 1.5 s typical
- Maximum Startup Current: < 50 mA for 2 μs
- Analog Outputs
  Offset at 0 V: ±3 mV (maximum)
  Deviation for Digital Signal: ±1 mV (0.1°C, 0.1% RH)

Air Temperature

- Temperature Sensor: PT100 RTD, IEC 751 1/3 Class B
- Measurement Range: -40° to +60°C (default)
- Output Signal Range: 0 to 1 V
- Accuracy at 23°C: ±0.1°C with standard configuration settings
- Long Term Stability: < 0.1°C per year

Relative Humidity (RH)

- Sensor: ROTRONIC® Hygrometer IN-1
- Measurement Range: 0 to 100% RH, non-condensing
- Output Signal Range: 0 to 1 Vdc
- Long-Term Stability: < 1% RH per year
- Accuracy at 23°C: ±0.8% RH with standard configuration settings

Sensor Time Constant [63% of step change (1 m s⁻¹ air flow at sensor)]
- Standard PE Filter: ≤ 22 s
- Optional Teflon Filter: ≤ 30 s (typical 4 s)

Notes:

*The startup time is Rotronics specification. Campbell Scientific recommends 2 s at 60°C, 3 s at 0°C, and 4 s at -40°C.
*The black outer jacket of the cable is Santoprene® rubber. This compound was chosen for its resistance to temperature extremes, moisture, and UV degradation. However, this jacket will support combustion in air. It is rated as slow burning when tested according to U.L. 94 H.B. and will pass FM-VSS302. Local fire codes may preclude its use inside buildings.