

# HMP45C

## Temperature and Relative Humidity Probe



The HMP45C is a rugged, accurate temperature/RH probe manufactured by Vaisala Inc., that is ideal for long-term, unattended applications. The probe uses a capacitive polymer H chip to measure RH and a PRT to measure temperature.

To reduce the current drain, power can be supplied to the HMP45C only during measurement when the sensor is connected to the datalogger's switched 12 V terminal. Dataloggers that do not have a switched 12 V terminal, such as the CR510 or CR7, can use the SW12V Switched 12 V device to switch power to the sensor only during measurement. For optimum results, the HMP45C should be recalibrated annually.

### Sensor Mounts

The 41003-5 radiation shield should be used when the HMP45C is exposed to sunlight. The 41003-5 can attach directly to a mast or tower leg or to a CM202, CM204, or CM206 crossarm.

### Ordering Information

#### Air Temperature and Relative Humidity Probe

**HMP45C-L** Vaisala Temperature/RH Probe with user-specified cable length. Enter cable length, in feet, after the -L. The maximum cable length is 1000 ft. Each 100 ft of cable increases the apparent RH reading by approximately 0.56% RH and the temperature by 0.56°C. Must choose a cable termination option (see below).

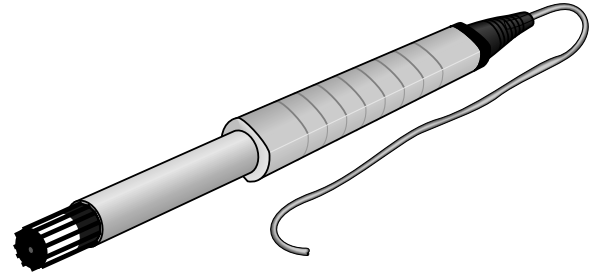
#### Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in connector for attachment to a prewired enclosure.

#### Accessories

**SW12V** Switched 12 V device that uses a control port and a 12 V channel to switch power to the HMP45C instead of a switched 12 V terminal.

**41003-5** 10-Plate Gill Radiation Shield to house the HMP45C



### Recommended Cable Lengths

| 2-m Height |       | Atop a tripod or tower via a 2-ft crossarm such as the CM202 |       |       |       |       |       |       |       |       |
|------------|-------|--|-------|-------|-------|-------|-------|-------|-------|-------|
| Mast/Leg   | CM202 | CM6  | CM106 | CM10  | CM110 | CM115 | CM120 | UT10  | UT20  | UT30  |
| 9 ft       | 11 ft | 11 ft  | 14 ft | 14 ft | 14 ft | 19 ft | 24 ft | 14 ft | 24 ft | 37 ft |

*Note: Add two feet to the cable length if mounting the enclosure to the leg base of a CM106, CM110, CM115, or CM120 tripod.*

## Manufacturer Specifications

|                               |                         |
|-------------------------------|-------------------------|
| <b>Supply Voltage:</b>        | 12 Vdc nominal          |
| <b>Current Consumption:</b>   | ≤4 mA (active)          |
| <b>Dimensions</b>             |                         |
| Diameter:                     | 1 in. (2.5 cm)          |
| Length:                       | 10 in. (25.4 cm)        |
| <b>Weight:</b>                | 0.6 lb. (0.27 kg)       |
| <b>Filter:</b>                | 0.2 μm Teflon® membrane |
| <b>Filter Diameter:</b>       | 0.75 in. (1.9 cm)       |
| <b>Operating Temperature:</b> | -40° to +60°C           |

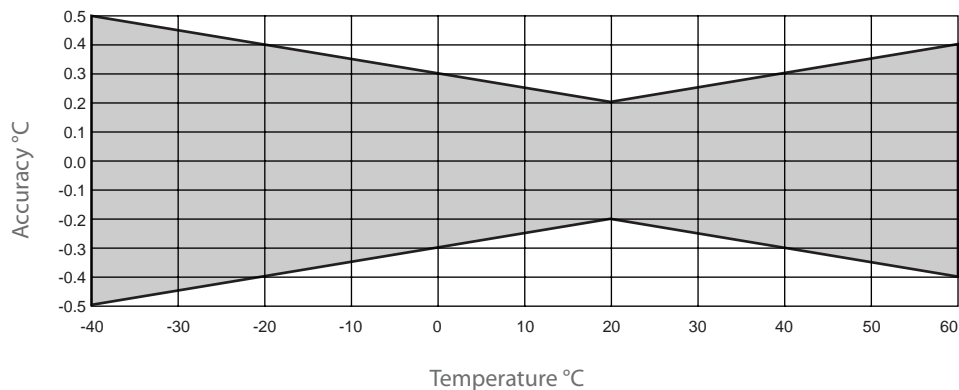
### Air Temperature

|                              |                 |
|------------------------------|-----------------|
| <b>Temperature Sensor:</b>   | 1000 ohm PRT    |
| <b>Measurement Range:</b>    | -39.2° to +60°C |
| <b>Output Signal Range:</b>  | 0.008 to 1.0 V  |
| <b>Temperature Accuracy:</b> | see graph below |

### Relative Humidity (RH)

|                                   |   |
|-----------------------------------|---|
| <b>Sensor:</b>                    | Vaisala's HUMICAP® H-chip                                     |
| <b>Measurement Range:</b>         | 0.8 to 100% RH,<br>non-condensing                             |
| <b>Output Signal Range:</b>       | 0.008 to 1 Vdc  |
| <b>Accuracy at 20°C</b>           |   |
| <b>against factory reference:</b> | ±1% RH  |
| <b>field-calibrated</b>           |   |
| <b>against references:</b>        | ±2% RH (0 to 90% RH)<br>±3% RH (90% to 100% RH)               |
| <b>Temperature Dependence:</b>    | ±0.05% RH/°C  |
| <b>Long-Term Stability:</b>       | Typically, better than<br>1% RH per year                      |
| <b>Response Time:</b>             | 15 seconds with<br>membrane filter<br>(at 20°C, 90% response) |
| <b>Settling Time:</b>             | 500 milliseconds  |

Temperature Accuracy Graph



### Notes:

- (1) 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 FMVSS302. Local fire codes may preclude its use inside buildings.
- (2) The HMP45C is manufactured by Vaisala, Inc. (Woburn, MA) but cabled and modified by Campbell Scientific for use with our dataloggers.

