



## Overview

The 083E is a temperature and relative-humidity probe that is commonly used with the WMS100 for wind-farm power performance measurements. The probe is made of corrosion resistant

aluminum and polymer, and is water-tight. It measures the full range of relative humidity, from 0 to 100%.

## Technical Description

The 083E measures variance in the capacitance change of a one micron thick dielectric polymer layer. This film absorbs water molecules through a metal electrode, and causes a capacitance change that is proportional to relative humidity. The thin polymer layer reacts

quickly, providing up to 90% of the final value of relative humidity in fewer than five seconds. The sensor's response is essentially linear, with small hysteresis, and negligible temperature dependence.

Temperature is measured with an internal thermistor.

## Sensor Mounts

When exposed to sunlight, the 083E must be housed in a 41003-5 or RAD14 naturally aspirated radiation shield. The 41003-5 and RAD14 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.

The RAD14 uses a double-louvered design that offers improved sensor protection from driving rain, snow, insect intrusion and has lower self-heating in bright sunlight combined with higher temperatures ( $> 24^{\circ}\text{C}$  ( $\sim 75^{\circ}\text{F}$ )) and low wind speeds ( $< 2 \text{ m s}^{-1}$  ( $\sim 4.5 \text{ mph}$ )) giving a better measurement.



## Ordering Information

### Temperature/RH Probe

**083E-L** Met One Temperature/RH Probe with user-specified cable length. Enter length, in feet, after the -L (see Recommended Cable Lengths). 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 a connector for attachment to a prewired enclosure.

### Radiation Shield

**41003-5** 10-Plate R. M. Young Radiation Shield with U-bolts for attachment to a Campbell Scientific crossarm or mast.

**RAD14** 14-Plate MetSpec Radiation Shield with U-bolts for attachment to a Campbell Scientific crossarm or mast.



### Cable Length Recommendations<sup>1</sup>

2 m Height	CM106B <sup>2</sup>	CM110 <sup>2</sup>	CM115 <sup>2</sup>	CM120 <sup>2</sup>	UT10	UT20	UT30
3.4 m (11 ft)	4.3 m (14 ft)	4.3 m (14 ft)	5.8 m (19 ft)	7.3 m (24 ft)	4.3 m (14 ft)	7.3 m (24 ft)	11.3 m (37 ft)

#### Notes:

1. The lengths assume the sensor is mounted at the end of a 2 ft crossarm.
2. The lengths assume the enclosure is mounted to the tripod mast. If it is mounted to the leg base, add 0.6 m (2 ft) to the cable length.

## Specifications

- › Input Power: 4 mA at 12 Vdc (10 to 14 Vdc)
- › Diameter: 1.91 cm (0.75 in)

- › Length: 19.05 cm (7.5 in)
- › Weight: 70.9 g (2.5 oz)

### Temperature

- › Temperature Sensor: Thermistor (precision multi-element)
- › Operating Temperature: -50° to +50°C

- › Accuracy:  $\pm 0.10^{\circ}\text{C}$  ( $0.18^{\circ}\text{F}$ )
- › Output: Resistive

### Relative Humidity

- › Sensing Element: Thin film polymer capacitor
- › Range: 0 to 100% relative humidity
- › Response Time: 10 s with  $2\text{ m s}^{-1}$  aspiration

- › Temperature Coefficient: 0.04% RH per  $^{\circ}\text{C}$
- › Accuracy:  $\pm 2.0\%$  from 0 to 100% humidity
- › Output: 0 to 1 Vdc



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