

107 and 108

Temperature Probes

The 107 and 108 are rugged, accurate probes that measure air, soil, and water temperature in a variety of applications. These probes consist of a thermistor encapsulated in an epoxy-filled aluminum housing. The housing protects the thermistor allowing the probes to be buried or submerged. The 107 measures from -35° to $+50^{\circ}\text{C}$, the 108 from -5° to $+95^{\circ}\text{C}$.

Please note that the 107 and 108 are not compatible with the CR200(X)-series dataloggers. However, a similar thermistor, the 109, has been developed specifically for our CR200(X)-series dataloggers.

Installation

Air Temperature

When exposed to sunlight, the 107 and 108 probes should be housed in a 41303-5A 6-plate Gill Radiation Shield. The 41303-5A's louvered construction allows air to pass freely through the shield thereby keeping the probe at or near ambient temperature. The shield's white color reflects solar radiation. The 41303-5A attaches to a crossarm, mast, or user-supplied pipe with a 1.0-in. to 2.1-in. outer diameter.

Water Temperature

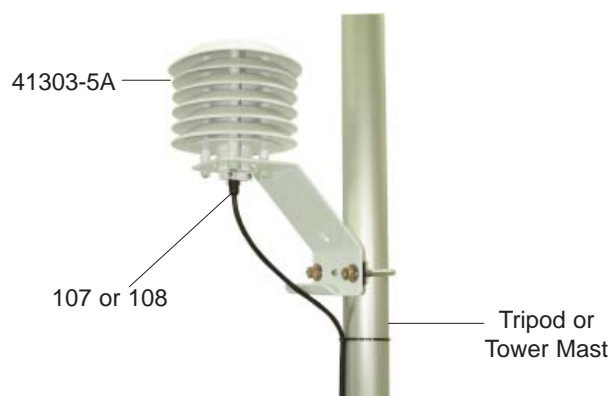
The probes can be submerged to 50 feet (21 psi). Please note that neither the 107 nor 108 is weighted. Therefore, the installer should either add a weighting system or secure the probe to a fixed, submerged object, such as a piling.

Soil Temperature

The 107 and 108 are suitable for shallow burial only. Placement of the probe's cable inside a rugged conduit may be advisable for long cable runs—especially in locations subject to digging, mowing, traffic, use of power tools, or lightning strikes.

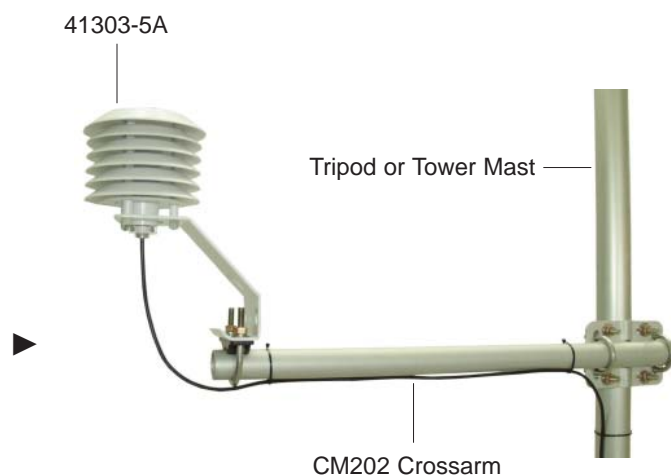


Each 107 or 108 probe requires one single-ended channel for measurement.



Above is a probe housed in the 41303-5A radiation shield. The U-bolt is placed in the holes on the side of the bracket to allow the 41303-5A to be attached to a mast or vertical pole.

To attach the 41303-5A to a CM202, CM204, or CM206 crossarm, place the 41303-5A's U-bolt in the bottom holes.



Recommended Cable Lengths for Air Temperature Measurements

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

Note: Add two feet to the cable length if you are mounting the enclosure on the leg base of a light-weight tripod.

Ordering Information

Temperature Probes

- 107-L** Temperature Probe (-35° to +50°C) with a user-specified cable length; enter the cable length (in feet) after the -L. Recommended cable length is shown above. Must choose a cable termination option (see below).
- 108-L** Temperature Probe (-5° to +95°C) with a user-specified cable length; enter the cable length (in feet) after the -L. Recommended cable length is shown above. 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.

Solar Radiation Shield for Air Temperature Measurements

- 41303-5A** 6-Plate Gill Radiation Shield that houses a 107 or 108 for air temperature measurements.

Specifications

Sensor: BetaTherm 100K6A1B Thermistor

Tolerance

- 107:** $\pm 0.2^{\circ}\text{C}$ over 0° to 50°C range
- 108:** $\pm 0.2^{\circ}\text{C}$ over 0° to 70°C range

Temperature Measurement Range

- 107:** -35° to $+50^{\circ}\text{C}$
- 108:** -5° to $+95^{\circ}\text{C}$

Steinhart-Hart Equation Error

(CRBasic loggers only): $\leq \pm 0.01^{\circ}\text{C}$ over measurement range

Polynomial Linearization Error (Edlog loggers only)

- 107:** Typically $< \pm 0.5^{\circ}\text{C}$ over measurement range
- 108:** Typically $< \pm 0.5^{\circ}\text{C}$ over -5° to $+90^{\circ}\text{C}$ range

Time Constant in Air: 30 to 60 seconds in a wind speed of 5 m sec^{-1}

Maximum Cable Length: 1000 ft (305 m)

Probe Length: 4.1 in. (10.4 cm)

Probe Diameter: 0.3 in. (0.762 cm)

Weight: 5 oz (136 g) with a 10-ft (3 m) cable

