

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-series dataloggers. However, a similar thermistor, the 109, has been developed specifically for our CR200-series dataloggers.



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

Installation

Air Temperature

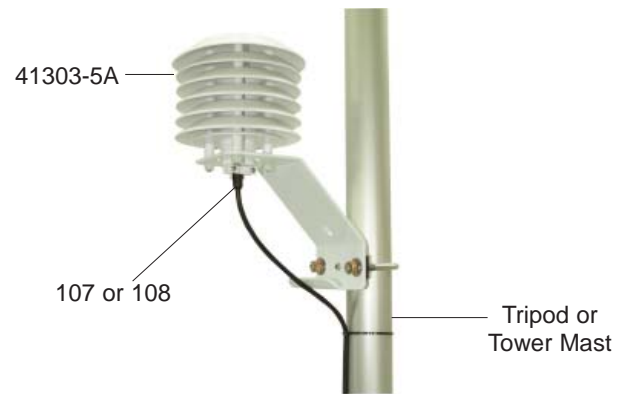
When exposed to sunlight, the 107 and 108 probes should be housed in a 41303-5A 6-plate Gill Radiation Shield. The 41303-5A's louvered construction allows air to pass freely through the shield thereby keeping the probe at or near ambient temperature. The shield's white color reflects solar radiation.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

Water Temperature

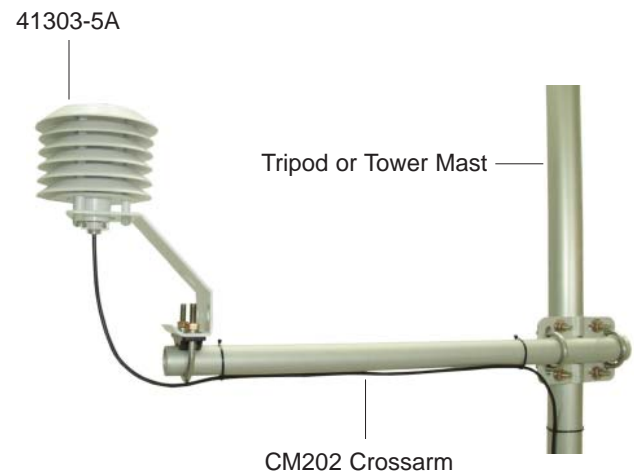
The probes can be submerged to 50 feet (21 psi). Please note that neither the 107 nor 108 is weighted. Therefore, the installer should either add a weighting system or secure the probe to a fixed, submerged object, such as a piling.

Soil Temperature

The 107 and 108 are suitable for shallow burial only. These probes should be placed horizontally at the desired measurement depth to avoid thermal conduction from the surface to the thermistor. 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.



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 Lead 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'	11'	11'	14'	14'	19'	24'	14'	24'	37'

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

Model	Description
Recommended lead lengths for air temperature measurements are listed above.	
107-L	Temperature Probe (-35° to +50°C) with a user-specified lead length; enter the lead length (in feet) after the -L.
108-L	Temperature Probe (-5° to +95°C) with a user-specified lead length; enter the lead length (in feet) after the -L.
-PW	Optional connector for connecting a 107 or 108 probe 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: $\pm 0.2^{\circ}\text{C}$ 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):

Typically $< \pm 0.5^{\circ}\text{C}$ over -35° to $+90^{\circ}\text{C}$ range

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

Maximum Lead Length: 1000' (305 m)

Length: 4.1" (10.4 cm)

Diameter: 0.3" (0.762 cm)

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

