RTD Temperature Probe & Aspirated Radiation Shield

Models 43347 and 43408

RM Young's 43347 RTD Temperature Probe and 43408 Aspirated Radiation Shield typically provide "delta temperature" measurements for air quality applications. To determine delta temperature, a 43347 probe mounted in a 43408 shield is attached to the mast of a UT20 or UT30 tower, while another 43347 probe mounted in a 43408 shield is attached to the tower at a 2 m height. The temperature difference of the two measurement heights is calculated and used to determine atmospheric stability as required by the EPA.

The 43347 probe connects to two differential channels and an excitation channel on the datalogger.

43347 RTD Temperature Probe

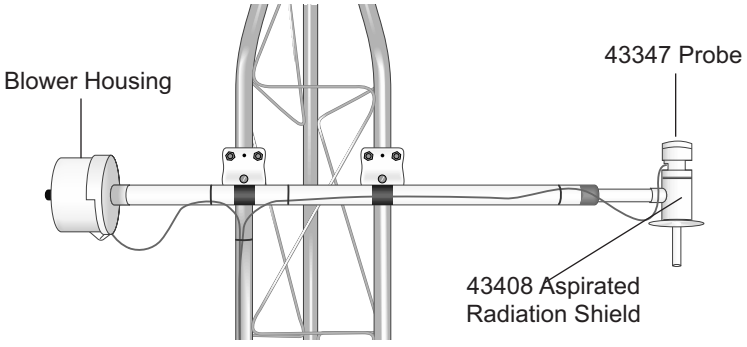
The 43347 probe has a 1000 ohm RTD that accurately measures ambient air temperature. The standard 43347 probe has an RTD uncertainty of ±0.3°C. If increased accuracy is required, a three point calibration can be ordered that allows the RTD to have an uncertainty of only ±0.1°C.

43408 Aspirated Radiation Shield

The 43408 Aspirated Radiation Shield is constructed from a white thermoplastic material that provides low thermal conductivity and heat retention. Concentric downward facing intake tubes and a small canopy shade isolate the temperature probe from direct and indirect radiation. The 43347 probe mounts vertically in the center of the intake tubes.

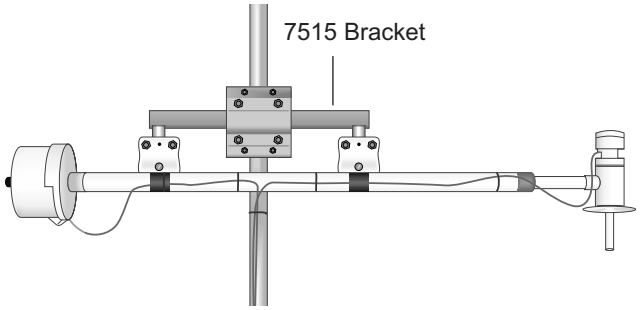
A continuous duty, brushless dc blower draws ambient air into the shield and across the probe to reduce radiation errors. This allows temperature to be measured with an RMS error of less than ±0.2°C. The blower operates off a 115 Vac to 12 Vdc transformer that is included with the shield.

Mounting to the Tower



For the 2 m measurement, the 43408 is attached directly to two of the tower legs using the mounting brackets included with the 43408.

For the upper measurement, attach the 43408 to the top most mast of a UT20 or UT30 tower (20 and 30 ft measurement heights, respectively) using the 7515 Tower Aspirated Shield Mount.



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Ordering Information

43347 R.M. Young RTD Temperature Probe (either the "-VX" or "-IX" option must be chosen).

- -L User-specified lead length; enter the lead length (in feet) after the L. Order an 11 ft (43347-L11) lead length for the 2 m measurement height; a 24 ft (43347-L24) lead length for mounting to the mast of a UT20 tower and a 34 ft (43347-L34) lead length for mounting to the mast of a UT30 tower.
- -VX 4-Wire Half Bridge/VX; with this option, the 43347 RTD is connected to the datalogger's voltage switched excitation ports. This option is compatible with our CR510, CR800, CR10X, CR1000, CR3000, CR5000, CR7, and CR9000X dataloggers.
- -IX Resistance/IX; with this option the 43347 RTD is connected to the switched current outputs on a CR3000 or CR5000 datalogger.
- -CC Optional 3-point calibration for the 43347 that provides ±0.1°C uncertainty (-50° to +50°C).

43408 R.M. Young Aspirated Radiation Shield.

- -L User-specified power lead length; enter the lead length (in feet) after the L. Order an 11 ft (43408-L11) lead length for the 2 m measurement height; a 24 ft (43408-L24) lead length for mounting to the mast of a UT20 tower and a 34 ft (43408-L34) lead length for mounting to the mast of a UT30 tower.

7515 Tower Aspirated Shield Mount for attaching the 43408 to a tower mast.

Specifications

43347 RTD Temperature Probe

Sensing Element: HY-CAL 100 ohm Platinum RTD

Temperature Range: ±50°C

Accuracy: ±0.3°C at 0°C; ±0.1°C with NIST calibration

Temperature Coefficient: 0.00375 ohm/°C

Weight: 1.2 lbs (0.54 kg)

Dimensions: 7″ (17.8 cm) overall length,
0.125" (0.318 cm) probe tip diameter,
2.25" (5.72 cm) probe tip length

43408 Aspirated Radiation Shield

Air Flow Rate: 3 to 7 m s^{-1} depending on sensor size

Temperature Range: ±50°C

Power Required: 12 to 14 Vdc @ 420 to 480 mA

115 Vac to 12 Vdc Transformer: outputs up to 800 mA

Radiation Error: <0.2°C radiation @ 1100 W m^{-2} irradiance

Life Expectancy on Blower: 80,000 hrs @ 25°C

Dimensions: 44″ (111.8 cm) length that is extendable to 75" (190.5 cm),
6" (15.2 cm) blower housing diameter

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