

Radiation Frost Detector

Effective prediction of leaf temperatures for orchards

NEW, IMPROVED DESIGN!



Monitor Radiation Frost Events

This detector is a new and improved design for measuring and detecting radiation frost events. On calm, clear nights, leaf temperatures can drop well below air temperature. Radiation frost occurs when frost forms at the surface before the air temperature reaches freezing. The radiation frost detector contains a high-accuracy thermistor in a rugged housing. The sensor mimics a leaf, which provides estimates of leaf temperatures to monitor radiation frost events.

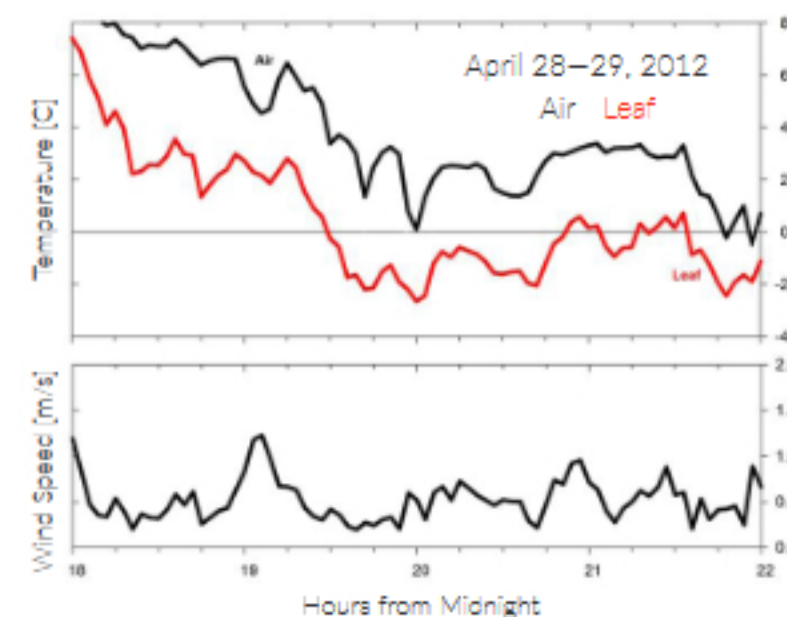
Wide Range, Accurate Measurements

Thermistor accuracy is ± 0.1 C across a range of 0 to 70 C, providing accurate measurements at temperatures near zero where frost damage is likely to occur.

Models

SF-110 Analog output
SF-421 Digital (SDI-12)

	SF-110	SF-421
Measurement Range	-50 to 70 C	
Measurement Uncertainty	0.1 C (from 0 to 70 C), 0.2 C (from -25 to 0 C), 0.4 C (from -50 to -25 C)	
Measurement Repeatability	Less than 0.05 C	
Long-term Drift (non-stability)	Less than 0.02 C per year (when used in non-condensing environments where the annual average temperature is less than 30 C; continuously high temperatures or continuously humid environments increase drift rate)	
Equilibration Time	10 s	
Self-heating	Less than 0.01 C (typical, assuming pulsed excitation of 2.5 V DC), 0.08 C at 5 C (maximum, assuming continuous input excitation of 2.5 V DC)	Less than 0.01 C
Operating Environment	-50 to 70 C; 0 to 100 % relative humidity	
Input Voltage Requirement	2.5 V DC excitation	5.5 to 24 V DC
Output Voltage Range	0 to 2.5 V DC (assuming input excitation of 2.5 V DC)	—
Current Draw	0.1 mA DC at 70 C (maximum, assuming continuous input excitation at 2.5 V DC)	1.56 mA (quiescent), 1.93 mA (active)
Dimensions	17.5 cm length, 2.2 cm pipe diameter, 6.0 cm disk diameter	
Mass	75 g	
Warranty	4 years against defects in materials and workmanship	



Above: Leaf temperature approximations measured with an Apogee SF-110 compared to air temperature (top panel) and wind speed (bottom panel) on the evening of April 28, 2012. Leaf temperatures were below air temperature after 8 P.M. and reached freezing 6 hours before the air temperature.