



# SF-110 & SF-421

## DESCRIPTION

The SF-110-SS has an un-amplified voltage output. The detector is a combination of two temperature sensors (precision thermistors) in a single housing. One sensor is designed to mimic a plant leaf the other a flower bud. The SF-110-SS provides close approximations to leaf and bud temperatures and has a temperature measurement range of -50 to 70 C. Typical applications include leaf and bud temperature estimates in cropped fields, orchards, and vineyards. Leaf and bud temperatures returned by the detector can then be used to alert growers to the potential of frost damage to crops. Sensor includes IP68 marine-grade stainless-steel cable connector 30 cm from head to simplify sensor removal and replacement for maintenance and recalibration.



### Features:

#### Monitor Radiation Frost Events

On calm, clear nights leaf and bud temperatures can drop well below air temperature. A radiation frost occurs when frost forms at the surface before the air temperature reaches freezing. The Apogee leaf and bud temperature sensor is a combination of two high accuracy thermistors mounted in a single housing: sensors mimic a leaf and bud, which provides estimates of leaf and bud temperatures to monitor radiation frost events.

#### Wide Range, Accurate Measurements

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

#### Output Options

Analog and digital output options include an unamplified voltage output or SDI-12 communication protocol.

#### Typical Applications

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	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 (max. 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 (per thermistor) at 70 C (max. assuming continuous input excitation of 2.5 V DC)	0.6 mA (quiescent), 1.3 mA (active)
Dimensions	570 mm length, 21 mm pipe diameter, 70 mm disk diameter	
Mass	400 g	
Warranty	4 years against defects in materials and workmanship	

## Contact info



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This Instrument is manufactured by our principle company

**Apogee Instruments - USA**