

Leaf-&-Air-Temperature

Type LAT-C (Conifer)

Technical Specifications



leaf temperature sensor type ΔLA-C on Norway spruce

The LAT-C (Leaf-&-Air-Temperature Conifer type) is a highly precise sensor for continuous measurements of needle surface and ambient air temperatures. Absolute air temperature (T_{air}) is measured via a highly precise micro thermistor probe, while the difference temperature between ambient air and needle surface (ΔT) is captured by means of a very thin thermopile (10-fold). Designed for conifer needles, the ultra-light-weight sensor, with its multiple measurement points, is directly attached to several different needles, providing a spatially integrative temperature signal.

Technical Specifications

Name	LAT-C : Leaf-&-Air Temperature Sensor, conifer type (*)
Application position, suitable for leaf size	Needle surface, needle length > 3mm
Range of the sensor - thermopile ($\Delta T_{leaf-to-air}$) - thermistor (T_{air})	$\Delta T = +/- 20^{\circ}C$ $T_{air} = -40$ to $125^{\circ}C$
Accuracy - thermopile ($\Delta T_{leaf-to-air}$) - thermistor (T_{air})	CR1000: $+/- (0.06\% * reading + 0.01^{\circ}C)$ CR1000: $+/- 0.2^{\circ}C$
Resolution - thermopile ($\Delta T_{leaf-to-air}$) - thermistor (T_{air})	Theoretically infinite, depends on data logger. (e.g. CR1000-Logger with $1 \mu V$ resolution within a Signal range of $+/- 7.5 mV$: $0.0025^{\circ}C$) Theoretically infinite, depends on data logger (e.g. CR1000-Logger with $667 \mu V$ resolution within a Signal range of $+/- 2500mV$: $0.1^{\circ}C$)
Size and weight	Length of thermopile 10 cm, ca. 0.5 g
Output signal type - thermopile ($\Delta T_{leaf-to-air}$) - thermistor (T_{air})	At a ΔT range of $+/- 20^{\circ}C$ signal ranges within $\pm 8.5 mV$ Supplied with 2500 mV, output signal is 0 to 2500mV
Power supply - thermopile ($\Delta T_{leaf-to-air}$) - thermistor (T_{air})	Not required Excitation voltage V_{ex} usually switched 2500 mV, power up 100ms max. Power consumption negligible.
Operating conditions	Air temperature: -25 to $70^{\circ}C$, air humidity: 0 to 100%

(*) patent pending