LAT-B1

Leaf-&-Air-Temperature (Broadleaf)

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Leaf temperature sensor type LAT-B on Lime tree

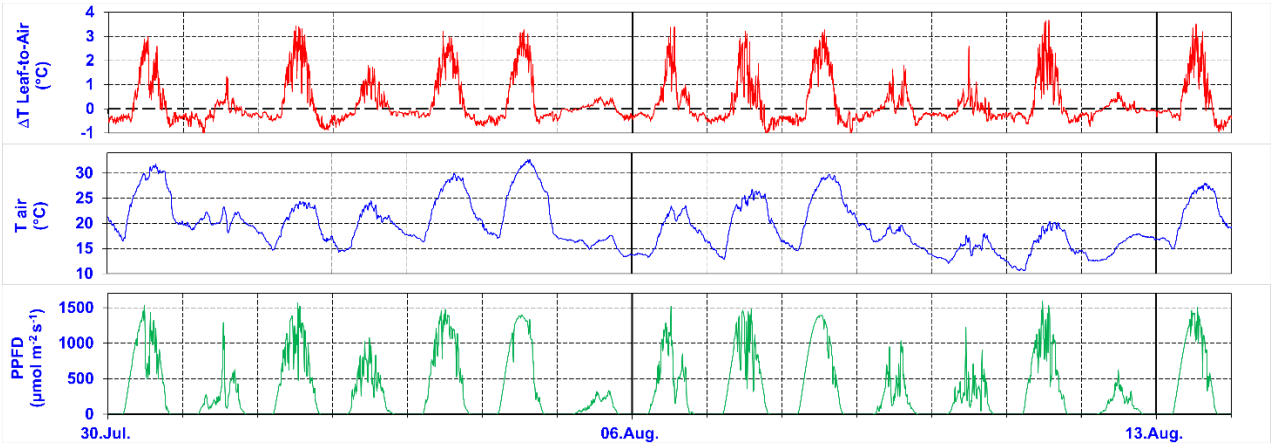
The LAT-B1 (**L**eaf-&-**A**ir-**T**emperature **B**roadleaf type) is a highly precise sensor for continuous measurements of leaf surface and ambient air temperatures. Absolute air temperature (Tair) is measured via a highly precise micro thermistor probe, while the difference temperature between ambient air and leaf surface (ΔT) is captured by means of a very thin thermopile (10-fold). Distributed over the leaf surface, multiple measurement points are in direct contact with the leaf surface, providing a spatially integrative temperature signal. Designed for broad leaves, the sensor is mounted at the leaf by means of a ultra-light-weight carbon frame.

Technical Specifications

Name	**LAT-B1 : Leaf-&-Air Temperature Sensor, broadleaf type (*)**
Application position, suitable for leaf size	Leaf surface, standard size for leaves between > 3 to 20 cm length
Range of the sensor **- thermopile (ΔTleaf-to-air)** **- thermistor (Tair)**	 ΔT = +/- 20°C Tair = -40 to 125°C
Accuracy **- thermopile (ΔTleaf-to-air)** **- thermistor (Tair)**	 CR1000: +/-(0.06%*reading+0.01°C) CR1000: +/- 0.2 °C
Resolution **- thermopile (ΔTleaf-to-air)** **- thermistor (Tair)**	 Theoretically infinite, depends on data logger. (e.g. CR1000-Logger with approx. 14 bits within +/- 7.5 mV: 0.0025°C) Theoretically infinite, depends on data logger (e.g. CR1000-Logger with approx. 14 bits within +/- 2500mV: 0.05°C)
Size and weight	2 cm x 2 cm x 0.1 cm, ca. 2 g
Output signal type **- thermopile (ΔTleaf-to-air)** **- thermistor (Tair)**	 At a ΔT range of +/- 20°C signal ranges within ± 8.5 mV electrical resistance (Ω), or voltage (mV) when using a bridge-circuit (bridge-circuit with 20 kΩ resistor included in standard delivery)
Power supply **- thermopile (ΔTleaf-to-air)** **- thermistor (Tair)**	 Not required Excitation voltage Vex usually 2500 mV
Operating conditions	Air temperature: -25 to 70 °C, air humidity: 0 to 100%

(*)patent pending

Data Sample



Absolute air temperature (Tair), leaf-to-air temperature difference (ΔT) on a mature European beech tree at the experimental site Kranzberg forest (TUM) near Munich, plotted over the prevalent solar radiation (PPFD)