



Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

LAT-2T-SDI12

Dual Leaf-Air Temperature Sensor

Quick Start & Installation Guide



phyto-sensor.com

Introduction

The LAT-2T Dual Leaf–Air Temperature Sensor is a precision instrument designed for accurate, non-invasive measurement of leaf temperature, air temperature, and their difference at the same measurement point.

The sensor contains two subminiature contact probes. When installed on a plant leaf, one probe measures the leaf temperature, while the second probe, suspended just below the leaf, measures the air temperature outside the leaf boundary layer in the immediate vicinity of the leaf surface. This configuration makes it possible to accurately measure the temperature difference between the leaf and the surrounding air under real field conditions.

The lightweight stainless-steel wire clip holds a high-precision, glass-encapsulated thermistor with a diameter of approximately 1 mm. The small size of the probe and its special design ensure almost negligible disturbance of the natural leaf temperature.

The thermistor is connected to the clip by thin 0.15 mm leads to minimize heat conduction and to achieve fast thermal response. All conductors are protected against corrosion for reliable operation under wet and outdoor conditions.

The probe is connected via a standard 0.5 m cable to a waterproof in-line signal conditioner. The standard output cable length is 3.5 m and can be customized at the time of ordering.

Each sensor is individually tuned and calibrated over the full measurement range. Typical sensor matching is $\pm 0.08^{\circ}\text{C}$.

The sensor communicates via the [SDI-12](#) interface ([version 1.3](#)).

Installation

Open the clip and carefully attach the sensor to a healthy, representative leaf. The thermistor measuring the leaf temperature must be placed on the shaded underside of the leaf.

IMPORTANT! Secure the sensor cable to the plant stem using adhesive tape or a similar fixing method in order to prevent accidental movement of the sensor during operation.

For correct measurements, both probes must be protected from direct solar radiation and from strong air turbulence as much as possible.

A wire hanger is provided for suspension.



Electrical Connection

The connection sequence and wiring polarity must be strictly observed. The cable shield should be grounded at the data logger side or connected to the negative terminal of the power supply.

Wire color coding

1	White	GND
2	Black	Shield
3	Yellow	SDI-12 Data (I/O)
4	Red	Power supply (5 to 24 V DC)

Power Supply

The sensor must be powered from an external regulated power supply with a voltage of 5 to 24 V DC.

Typical current consumption is approximately 2 mA. Maximum current consumption does not exceed 6 mA.

Data Reading

In accordance with [SDI-12](#) Standard ([version 1.3](#)).

Data order:

#	Parameter	Units	Resolution
1	Leaf temperature	°C	0.1
2	Air temperature	°C	0.1
3	Leaf-air temperature difference	°C	0.01

Specifications

Measurement range	0 to 50°C
Output interface	SDI-12
Instrumental accuracy	< $\pm 0.15^{\circ}\text{C}$
Typical sensor matching	$\pm 0.08^{\circ}\text{C}$
Excitation time	150 ms
Supply voltage	5 to 24 Vdc
Current consumption	2 mA typ. 6 mA max.
Probe weight	1.6 g
Effective thermistor contact area	approx. 1 mm ²
Probe dimensions	50 × 20 × 10 mm
Ingress protection rating	IP64
Standard cable length	4 m

Customer Support

If you need any assistance with your sensor, or if you have any questions or feedback, please contact us at:

support@phyto-sensor.com

Please include your name, company, contact details, and a short description of your question or problem.

Manufacturer

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