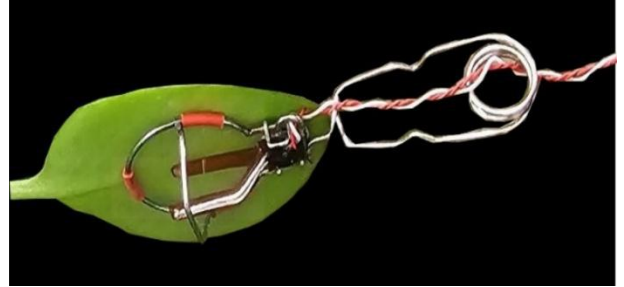


Leaf Temperature Sensors

Micro-thermistor-based sensors for real leaf temperature and leaf-air microclimate

All sensors use miniature thermistor-based probes designed for continuous measurement of true leaf temperature. The sub-millimeter contact tip attaches gently to the underside of a leaf and does not interfere with transpiration cooling, making it suitable for long-term physiological monitoring in research, phenotyping, and controlled-environment studies.

The LAT-2 and LATH-3 models additionally include a second thermistor for measuring air temperature below the leaf, outside the leaf's boundary layer. The LATH-3 further incorporates a precision temperature and humidity sensor inside its signal-conditioning module, positioned in the cable tube within 0.5 m of the leaf probe. Using an adiabatic correction model, the LATH-3 recalculates air temperature and humidity to the location of the air thermistor. It also derives all secondary parameters with reference to the micro-space between the leaf and air thermistors, ensuring high physiological relevance.



Common symbol	Key Output	Sensor Model			
		LT-1M	LT-1T	LAT-2T	LATH-3T
T_l	Leaf Temperature (°C)	✓	✓	✓	✓
T_a	Air Temperature (°C)	-	-	✓	✓
$\Delta T = T_l - T_a$	Leaf-Air Temperature Difference, (°C)	-	-	✓	✓
RH_a	Air Relative Humidity (%RH)	-	-	-	✓
VPD_a	Air VPD (kPa)	-	-	-	✓
VPD_l	Leaf VPD (kPa)	-	-	-	✓
e_a	Air Partial Vapor Pressure (kPa)	-	-	-	✓
e_l	Leaf Internal Vapor Pressure (kPa)	-	-	-	✓
e_{sa}	Air Saturated Vapor Pressure (kPa)	-	-	-	✓
c_{va}	Air Absolute Humidity (mmolH ₂ O/m ³)	-	-	-	✓

Specifications:

Thermistor Probes (all models)	
Measurement range*	0 to 50 °C
Tolerance	± 0.08 °C
Instrumental accuracy	< 0.15 °C
Probe weight	< 2 g
Thermistor contact area	< 1 mm ²

Air Temperature and Humidity Probe (LATH-3)	
Typ. relative humidity accuracy	1.5 %RH
Operating relative humidity range	0 – 100 %RH
Typ. Temperature accuracy	0.1 °C
Operating temperature range	0 to 50 °C
Response time (τ)	8 s

Model	Output/Interface	Power requirements	Outline	
LT-1 Leaf Temperature Sensors				
LT-1M	0 to 2 Vdc and 4 to 20 mA	7 to 30 Vdc	Has terminal for customer's output cable	
LT-1T-V1	0 to 2 Vdc	2.8 to 12 Vdc		
LT-1T-V2	0 to 2 Vdc	5 to 16 Vdc	4-m output cable (customized)	
LT-1T-SDI12	SDI-12	5 to 24 Vdc		
LT-1T-485	TS-485 Modbus	5 to 24 Vdc		
LAT-2 Dual Leaf-Air Temperature Sensors				
LAT-2T-SDI12	SDI-12	5 to 24 Vdc		
LAT-2T-485	TS-485 Modbus	5 to 24 Vdc		
LATH-3 Leaf-Air Temperature & Humidity Sensors				
LATH-3-SDI12	SDI-12	5 to 24 Vdc		
LATH-3-485	TS-485 Modbus	5 to 24 Vdc		