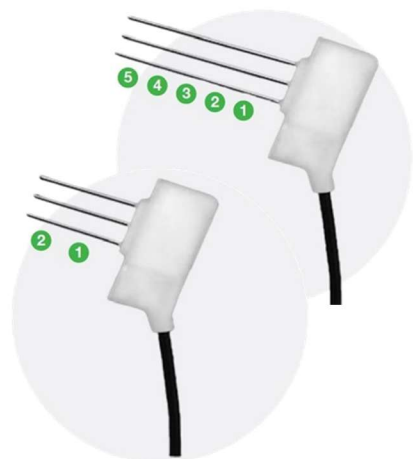


SFM-5 and SFM-5 L

SAP FLOW, TRANSPIRATION & STEM WATER CONTENT SENSOR

- High-precision, calibrated heat-pulse sap flow sensors
- Dual Method Approach (DMA) for reliable measurement of sap flow, sap flow density, and stem water content
- Measurement of the full sap flow range – from reverse (negative) and very slow to extremely fast sap flow
- Output of more than 30 parameters as raw data or output of a calibrated sap flow value
- Minimally invasive measurement from a stem diameter of 1 cm
- Digital integration with a wide range of data loggers and IoT devices supporting the SDI-12 protocol; low power consumption
- Easy to install and compact



SFM-5 AND SFM-5 L VARIANTS

- SFM-5: 30 mm needle length, 2 measurement points – suitable for smaller trees, shrubs, herbaceous plants, young plants, and plants with shallow sapwood (e.g. ring-porous species)
- SFM-5 L: 60 mm needle length, 5 measurement points – suitable for larger trees with greater sapwood depth and corresponding radial profiles

APPLICATIONS

- Larger sample sizes enabled by cost-effective sensors
- Suitable for field, greenhouse, and laboratory applications
- Suitable for field use under a wide range of climatic conditions
- Suitable for applications in plant physiology, irrigation planning, hydrology, scientific research, and engineering projects
- Integration into measurement systems with NB-IoT, LoRaWAN, and other telemetry solutions possible



TECHNICAL DATA

	SFM-5	SFM-5 L
SAP FLOW MEASUREMENTS		
Measurement Range	-1000 to >+1000 cm/hr (heat velocity) -200 to >200 cm³/cm²/hr (sap flux density)	
Measurement Errors	<3 % or ±0.1 cm/hr heat velocity	
Measurement Resolution	0.001 cm/hr heat velocity	
Measurement Points	2	5
Measurement Theory	Heat Pulse, Dual Method Approach (DMA), Heat Ratio (HRM), Tmax	
STEM (SAPWOOD) WATER CONTENT MEASUREMENTS		
Measurement Range	0 to 100 % volumetric	
Measurement Errors	±3 %	
Measurement Resolution	0.01 %	
Measurement Points	2: downstream directions	5: downstream directions
STEM (SAPWOOD) TEMPERATURE MEASUREMENTS		
Measurement Range	-30 to +70 °C	
Measurement Errors	±0.015 °C	
Measurement Resolution	0.001 °C	
Measurement Points	4: down- and upstream	10: down- and upstream
SENSOR SPECIFICATIONS		
Enclosure dimensions H x W x D	50 x 25 x 11 mm	
Enclosure Materials	Acrylonitrile Styrene Acrylate	
Distance between needles	8 mm	
Needle dimensions	30 x 1.8 mm	60 x 1.8 mm
Position of the thermistors	10 and 20 mm from sensor head	10, 20, 30, 40 and 50 mm from sensor head
Thermistor response time	200 milliseconds	
Power Input	12 VDC	
Power Consumption	Idle: 4 mA; Measure: 270 mA; Typical measuring cycle: 0.4 mAhr	Idle: 4 mA; Measure: 520 mA; Typical measuring cycle: 0.7 mAhr
Sensor Output	SDI-12 (ver. 1.4)	
Measurement Duration	124 seconds	
Operating temperature	Sap flow measurements only under frost-free conditions (>0 °C), -20 to +70 °C (sensor electronics)	
Protection class	IP68	
Needle Materials	Stainless Steel (304)	
Cable Materials	Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2	