

**MEASUREMENT OF TRANSPIRATION IN WOODY PLANT STEMS WITH THE
TRANSIENT HEAT PROBE SENSOR SYSTEM**

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A compact portable electronic system was designed to measure sap flow in woody plant stems, utilizing a single heated thermistor probe which is alternately and automatically switched between a constant and a variable temperature mode of operation. A developed software prompts the users for the times used to control the probe sensor and allows the registration of local identification, date, time and data to specific memory locations. Results indicated that the heated thermistor is capable to work as a flowmeter since its transient thermal response was affected by the local sap flow. The fractional thermal natural logarithm response indicated that the system can not be analysed as a first order model. Further investigations are necessary to overcome the problems encountered in the thermal transient heat transfer process. **Keywords.** Sap Flow, Transpiration, Woody Plant Stems, Heat Pulse, Thermistor Probe Sensor, Transient Heat Transfer.