

Connecting Dendrometer to Data Loggers



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Requirements and Data conversion

All Ecomatik dendrometer models require one differential, or one single-ended logger channel and a known, regulated and precise excitation voltage (Vex). Recommended is a logger measurement resolution of at least 12 bits in the voltage range of 0 to Vex.

$$0.5 < V_{ex} < 10 \text{ V DC}$$

The output is Vout

$$0 \leq V_{out} \leq V_{ex}$$

Time of excitation ca. 100 mS

The result in $\mu\text{m} = V_{out} / V_{ex} * C$

C is a constant.

For dendrometer types DD-S, DD-S2, DD-S2W, DD-RO, DD-L1, DD-L1W, DR1, DR1W, DR3, DR3W, DV, DC1, DF1 (from Oct./2021)

$$C = 11\,000$$

For dendrometer types DF1 (until Sept./2021), DC2

$$C = 15\,000$$

For dendrometer Type DC3, DD-L2, DR2, DF2

$$C = 25\,400$$

For dendrometer Type DC4, DF3, DD-L3

$$C = 50\,800$$

For dendrometer Type DF4

$$C = 150\,000$$

Connection

3-wire connection

(cable type: 2-wires + shield)

Single-ended Voltage

Cable Color	Input Port
Brown	H (Signal, Vout +)
White	Vex
Black (shield)	GND

4-wire connection

(cable type: 4-wires + shield)

Single-ended Voltage

Cable Color	Input Port
Yellow	H (Signal, Vout +)
Green	GND
Brown	Vex
White	GND
Black	GND

Differential Voltage

Cable Color	Input Port
Yellow	H (Signal, Vout +)
Green	L (Signal, Vout -)
Brown	Vex
White	GND
Black	GND

Power Consumption

The internal resistance of dendrometers is 10 or 20 KOhms, depending on the respective model. If Vex = 5 V, and excitation time=0.1 second. The sensor energy consumption for one measurement is at maximum 69.4 nWh.