



Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

DE-1P

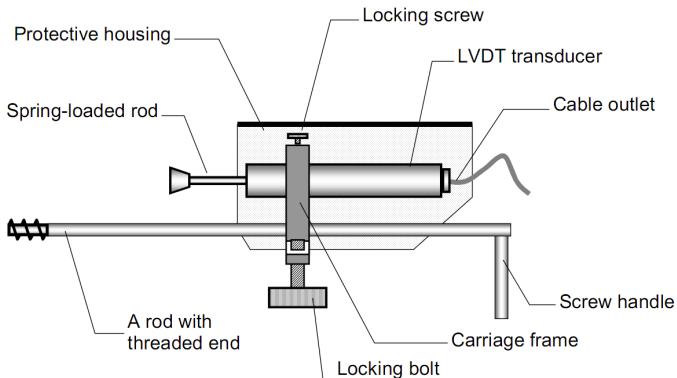
Dendrometer



Introduction

The DE-1P Dendrometer is a highly precise incremental LVDT-based sensor for monitoring micro-variations of trunk radius in micron range.

The sensor includes a linear displacement transducer (LVDT) mounted on a special rod with threaded end. When the rod is anchored inside the trunk, the LVDT rod follows movement of the trunk surface. The output signal follows the variation of distance between trunk surface and the anchored end of the rod.



The probe is connected by a standard 1-meter cable to the waterproof box with the signal conditioner inside. A signal conditioner provides excitation of the LVDT and production of standard linear output signal. Standard cable length between signal conditioner and monitor is 4 meters.

Connection

Plug the sensor into any analog input of the PM-11 Phytomonitor or the PTM-48A Photosynthesis Monitor. In the PC program, specify the input number where the sensor is connected to.

If you use the sensor for the first time, please make the appropriate record in the Sensors Database as described on page 5 of the PM-11 Phytomonitor Terminal Emulator software Guide or on page 11 of the PTM-48A Photosynthesis Monitor User's Guide.

Sensor data

Type: DE-1P

ID: #xxxx

Description: Dendrometer

Units: mm

Format: #.###

Measurement mode: Normal

Measurement ranges

Minimum: 0.000 mm

Maximum: 10.000 mm

Max Volts: 2.5 V

Coefficients

Standard

#	Coefficient
C0	0.00000e+000
C1	5.00000e+000
C2	0.00000e+000
C3	0.00000e+000
C4	0.00000e+000
C5	0.00000e+000

Edit

Defaults

Sensors Database Window in PM-11 / PTM-48A

Installation

- In trees with rough bark over the cambium, rasp it away and pare down carefully an area of about 6 L × 5 W cm². In caulis and species with smooth bark, no preparation may be needed.
- Drill the hole with the 3.3 – 3.5 mm bits. It is recommended to drill slowly using a wood drill set to a low torque to prevent excessive tearing of wood fibers along the length of hole. The depth of hole must be 3 cm min. and 9 cm max.
- Free the locking bolt and remove the rod from the carriage frame.
- Carefully screw the rod into the tree. If there is difficulty in insertion, clear the hole carefully with the drill bit.
- Once the rod is implanted, set the sensor on the rod and adjust its position until the butt of spring-loaded rod touches the trunk.
- Readjust the sensor when its readings become close to 0 or 10 mm.

Specifications

Measurement range	0 to 10 mm
Trunk diameter range	Above 6 cm
Resolution	0.005 mm (w/filter)
Operating temperature	0 to 50 °C
Temperature effect	< 0.02% total stroke / °C
Protection index	IP 64
Overall dimensions, mm	90 W × 60 H × 23 D
Carrying rod, mm	160 L × 4 Ø
Threaded end, mm	10 L × 5 Ø
Cable length between probe and signal conditioner	1 m
Output cable length	4 m



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