Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

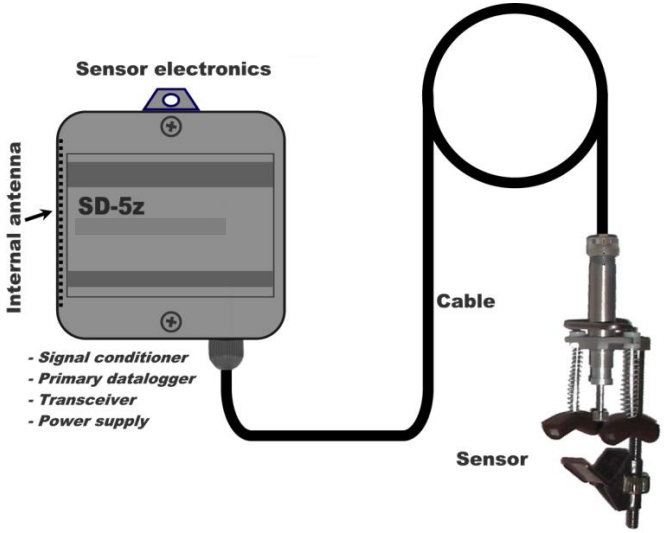
SD-5z, SD-6z, SD-10z

Wireless
Stem Micro-Variation Sensors

www.phyto-sensor.com

Introduction

SD-type sensor is a highly precise incremental LVDT-based sensor for monitoring micro-variations of stem diameter in micron range.



Plant growth and water balance affect diurnal behavior of stem diameter. The growth rate depends on a vegetation stage and environmental conditions. The diurnal variations represent mostly fluctuations of water content in plants. Two diameter-based indices are commonly used for evaluating plant water status:

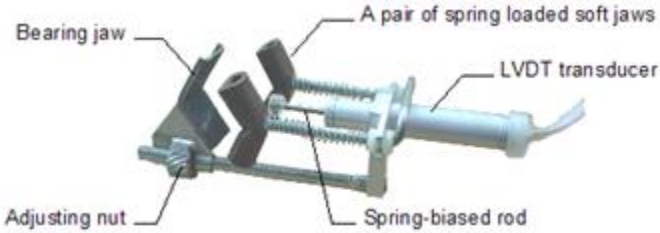
daily contraction amplitude and trend of daily maxima. The SD-type sensor allows investigating effects of irrigation rate and other environmental factors on water balance and growth of plants.

Installation

The SD-type sensor consists of an LVDT probe mounted in special fixing brackets, and a DC powered signal conditioner. Standard cable length between sensor and signal conditioner is 1 meter.

- Select an appropriate stem for sensor installation.
- Move the bearing jaw apart from LVDT transducer by rotating the adjusting nut.
- Locate the stem between the sensor's jaws.
- By rotating the adjusting nut, move the bearing jaw back until the jaws touch the stem.
- Continue rotation of the adjustment nut until then rod takes necessary position. If the stem is supposed to grow, the rational position is somewhere in the beginning of the rod's stroke. If the stem is supposed to shrink, choose a point somewhere at the end of the stroke. In other cases, leave the sensor somewhere in the middle between those two positions.

- Secure the sensor's cable on a stem to prevent occasional movement of the sensor.
- Readjust the sensor when its readings become close to 0 or 5 mm.



Communication

The SD sensor communicates over the radio 2.4 GHz channel with a network data logging unit. Activation of the sensor and measurement settings are described in the Quick Start Guide of the data logging unit (PTM-50 or PM-11z Phytomonitor or PC Phyto-Logger)

Power

The SD sensor is powered by three AA Alkaline batteries.

Readings

The SD sensor represents the end value made at the end of the measurement time interval.

Customer Support

If you ever need assistance with your equipment, or if you just have questions or feedback, please e-mail at support@phyto-sensor.com. Please include as part of your message your name, address, phone, and fax number along with a description of your problem.

Specifications

	SD-5z	SD-6z	SD-10z
Measurement range	0 to 5 mm		0 to 10mm
Stem diameter range, mm	5 to 25	20 to 70	
Resolution	< 0.002 mm		
Operating temperature	0 to 50 ℃		
Temperature effect	< 0.02% total stroke/℃		
Protection index	IP 64		
Cable length between probe and signal conditioner	1.8 m		

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