



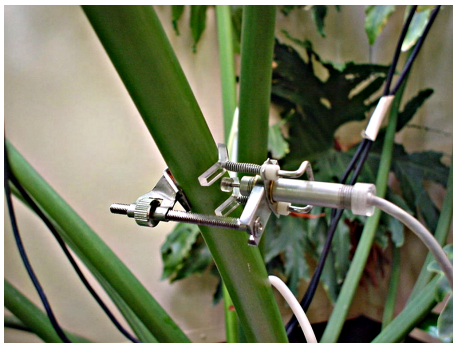
***Bio Instruments S.R.L.***

SENSORS AND SYSTEMS  
FOR MONITORING GROWING PLANTS

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## **SD-5P, SD-6P**

*Stem Micro-Variation Sensors*



## ***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.

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. Standard cable length between signal conditioner and monitor is 4 meters.

## Connection

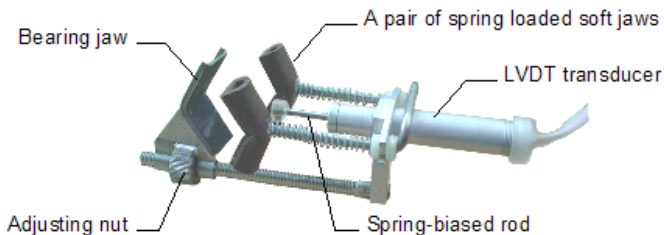
Plug the sensor into any analog input of the PM-11 Phytomonitor or the PTM-48A Photosynthesis Monitor. In the PC program, specify the input number where the sensor is connected to.

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.

#	Coefficient
C0	0.00000e+000
C1	2.50000e+000
C2	0.00000e+000
C3	0.00000e+000
C4	0.00000e+000
C5	0.00000e+000

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

## Installation



- 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.



## **Specifications**

	SD-5P	SD-6P
Measurement range	0 to 5 mm	
Stem diameter range, mm	5 to 25	20 to 70
Resolution	< 0.002 mm (w/filter)	
Operating temperature	0 to 50 °C	
Temperature effect	< 0.02% total stroke/°C	
Protection index	IP 64	
Cable length between probe and signal conditioner	1 m	
Output cable length	4 m	



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