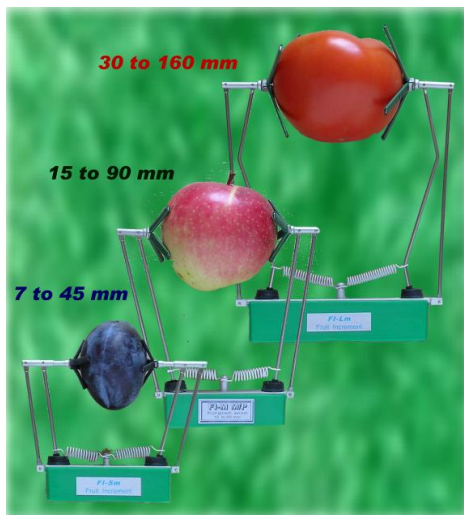




Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

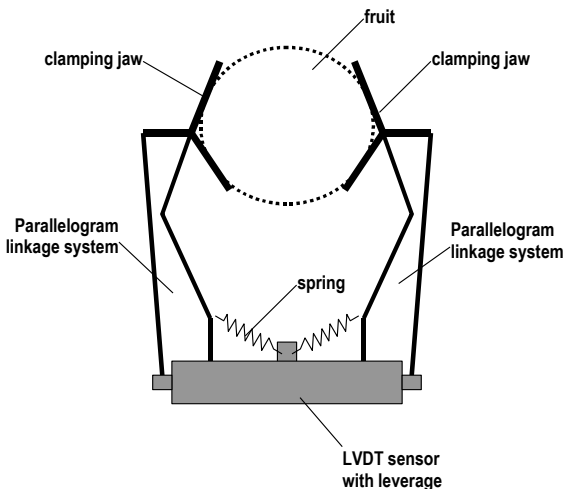
FI-SL, FI-ML, and FI-LL *Fruit Growth Sensors*

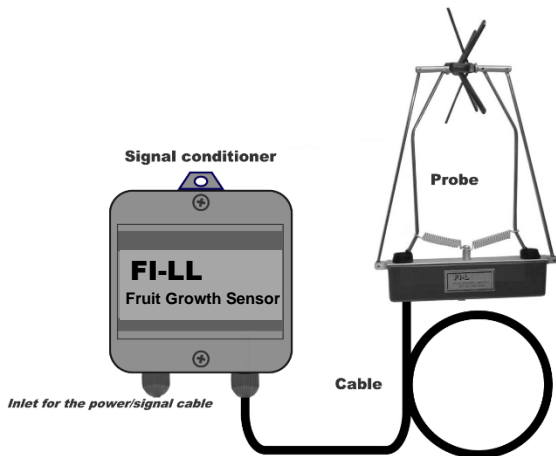


www.phyto-sensor.com

Introduction

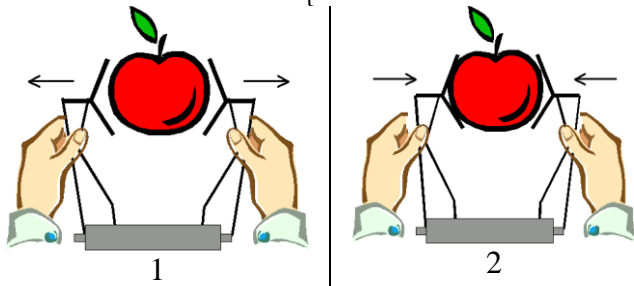
A series of absolute displacement sensors provides recording both size and growth rate of intact rounded (like tomato and apple) and oblong (like cucumber and banana) fruits in three diameter ranges within 7 to 160 mm. Original parallelogram design of moving arms provides firm and straight positioning of the sensor on a fruit under study. The FI-type sensor consists of an LVDT transducer mounted in a special clip, and a DC powered signal conditioner.





Installation

- Choose a fruit for attaching the sensor.
- Move clamping jaws apart so as the sensor can hold the fruit in the desired position.

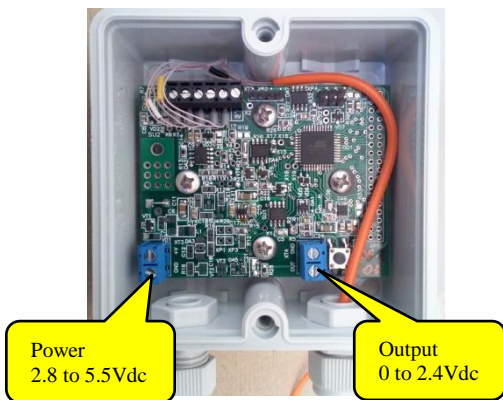


- Check if the sensor holds the fruit firmly and cannot easily slide down with application of gentle force.
- Secure the sensor's cable on a stem near the fruit in order to prevent occasional movement of the sensor.
- Check the position of the sensor regularly.

Connection

Please use a four-core cable with 3 to 6 mm outer diameter.

The connection ports are shown in the picture below



Maximal length of the output cable is 10 m.

Calibration table

| Voltage V | Diameter, mm | | |
|--------------|--------------|--------------|--------------|
| | <i>FI-LL</i> | <i>FI-ML</i> | <i>FI-SL</i> |
| 0,000 | 30 | 15 | 7 |
| 2,400 | 160 | 90 | 45 |

Calibrations equations

FI-LL model: $D = 54.167 \times U + 30$

FI-ML model: $D = 31.25 \times U + 15$

FI-SL model: $D = 15.833 \times U + 7$

Where D – fruit diameter in mm

U – output voltage in Volts

Response time is 0.25 s (after applying the power). The output is updated every 5 s at continuous power.

Power

The FI-sensors are to be powered from an external regulated power supply with 2.8 to 5.5 Vdc output voltage.

Specifications

| Model | FI-LL | FI-ML | FI-SL |
|---|--------------------------|--------------|--------------|
| Measurement range | 30 – 160 mm | 15 – 90 mm | 7 - 45 mm |
| Resolution, mm | <0.1 | <0.05 | <0.02 |
| Operating temperature | 0 to 50°C | | |
| Temperature effect | <200 ppm FS/°C | | |
| Analog linear output | 0 to 2.4 Vdc | | |
| Supply voltage | 2.8 to 5.5 Vdc@30mA max. | | |
| Output auto update time | 5 s | | |
| Excitation time | 0.25s | | |
| Protection index | IP 64 | | |
| Cable length between probe and signal conditioner | 2 m | | |

Customer Support

If you ever need assistance with your sensor, 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.



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