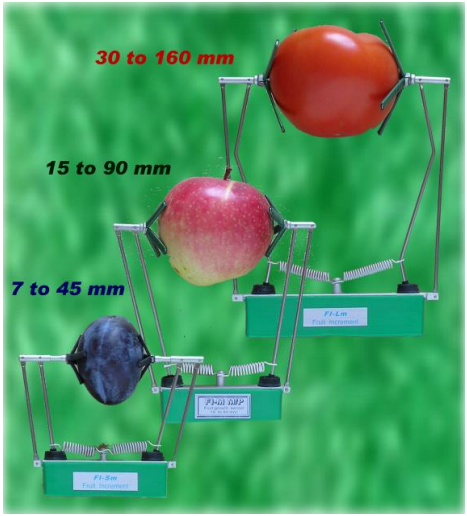
Bio Instruments S.R.L.

SENSORS AND SYSTEMS
FOR MONITORING GROWING PLANTS

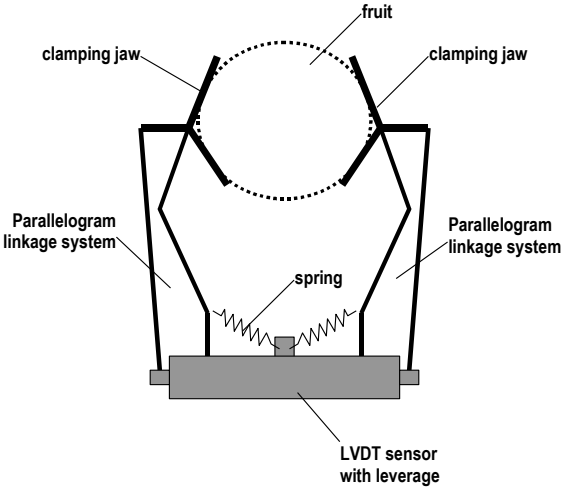
FI-SM, FI-MM, and FI-LM
Fruit Growth Sensors



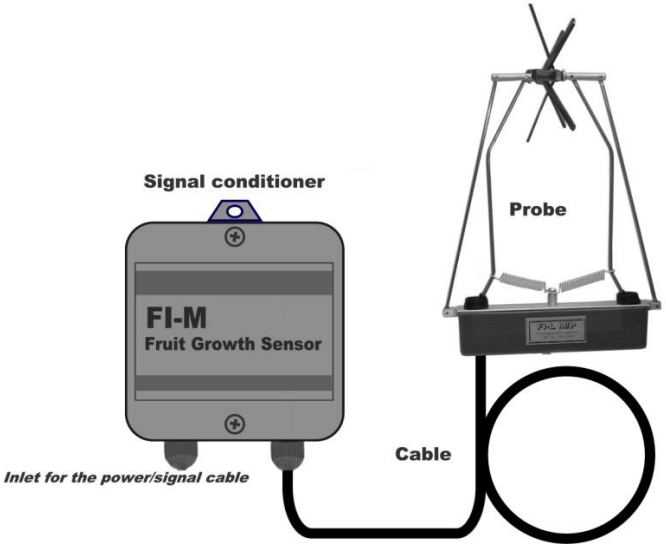
www.phyto-sensor.com

Introduction

A series of absolute displacement sensors provides recording both size and growth rate of intact rounded fruits in three diameter ranges within 7 to 160 mm. The 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.

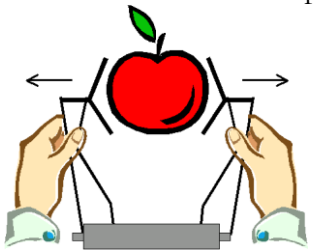


Standard cable length between the probe and the signal conditioner is 2 meters.

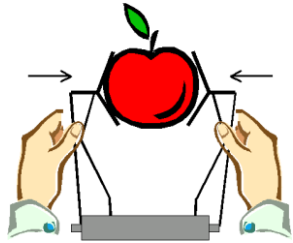


Installation

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



1



2

- 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 to prevent occasional movement of the sensor.
- Check the position of the sensor regularly.

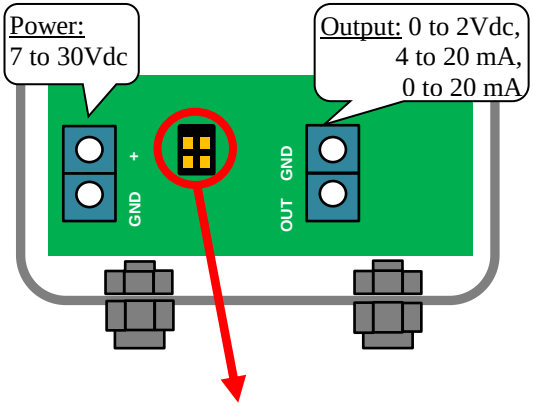
Connection

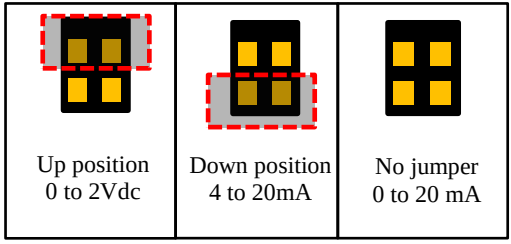
Please use a four-core cable with 3 to 6 mm outer diameter.
The connection diagram is shown in the picture below (modification of the output is determined by appropriate jumpers).

Maximal length of the output cable is 10 m for sensors with voltage output and up to 200 m for sensors with 4 to 20 and 0 to 20 mA output.

Select the desired type of analog output by appropriate position of the jumper XP1, XP3 as shown below.

Connection Diagram





Output configuration by a jumper

Calibrations table

V	mA	D, mm		
		FI-LM ***FI-LMi***	***FI-MM*** ***FI-MMi***	***FI-SM*** ***FI-SMi***
0	4	30	15	7
2	20	160	90	45

Calibrations equations

FI-LM *model:* D = 65×**U** + 30

FI-LMi *model:* D = 8.125×**I** – 2.5

FI-MM *model:* D = 37.5×**U** + 15

FI-MMi *model:* D = 4.6875×**I** – 3.75

FI-SM *model:* D = 19×**U** + 7

FI-SMi *model:* D = 2.375×**I** – 2.5

Where **U** – output voltage in Volts

I – output current in mA

Response time: less than 1 s (after applying the power).

The outputs are updated every 5 s at continuous power.

Power

The FI-sensors are to be powered from an external regulated power supply within 7 to 30 Vdc voltage.

Specifications

Model	FI-L	FI-M	FI-S
Measurement range, mm	30-160	15 - 90	7 - 45
Resolution, mm	<0.1	<0.05	<0.02
Operating temperature	5 to 50 ºC		
Temperature effect	<200 ppm FS/ºC		
Analog linear output (selectable)	0 to 2 Vdc, or 4-20 mA, or 0-20 mA		
Output auto update time	5 s		
Supply voltage	7 to 30Vdc @ 50 mA max.		
Excitation time	1s		
Protection index	IP 64		

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.

Phyto-Sensor Group

BIO INSTRUMENTS S.R.L.

20 Padurii St., Chisinau MD-2002
REPUBLIC OF MOLDOVA
Tel./Fax: +373-22-550026
info@phyto-sensor.com
www.phyto-sensor.com