HONDE TECHNOLOGY CO.,LTD

Fruit/stem growth sensor

Honde Technology CO.,LTD

https://hondetec.en.alibaba.com/

1. Product description

Fruit/stem growth sensor is a high-precision displacement increment sensor. The measurement principle is to measure the growth length of plant fruit or plant rhizome by using the moving distance of fruit/stem growth sensor, and record the growth size of complete fruit/rhizome.

2. The instrument has the following characteristics

1. High measurement accuracy and long service life.

2. Smooth engineering guide rail without noise output.

3. Excellent linearity and excellent material.

4. It is suitable for measuring fruits or rhizomes of various plants, and has no harm to plants.

3. Technical indicators

3.1 Technical Parameters

1. Measuring ranges: 0 ~ 10mm, 0 ~ 15mm, 0 ~ 25mm, 0 ~ 40mm, 0 ~ 50mm,
   0 ~ 75mm, 0 ~ 100mm, 0 ~ 125mm, 0 ~ 150mm, 0 ~ 175mm,
   0 ~ 200mm

2. Resolution: 0.01 mm

3. Output signal:

   A: Voltage signal (0 ~ 2V, 0 ~ 5V, 0 ~ 10V)

   B: 4 ~ 20mA (current loop)

   C: RS485 (standard Modbus-RTU protocol, device default address: 01)

   D: Wireless signals (4G, NB-IOT, WiFi, LoRa)

   E: Ethernet (RJ45 port)

4. Power supply voltage:

   A: 5 ~ 24V DC (when output signal is 0 ~ 2V, RS485)

B:12 ~ 24V DC (when the output signal is 0 ~ 5V, 0 ~ 10V, 4 ~ 20mA)

5. Linear accuracy: ± 0.1% FS

6. Repeatability accuracy: 0.01 mm

7. Maximum working speed: 5m/s

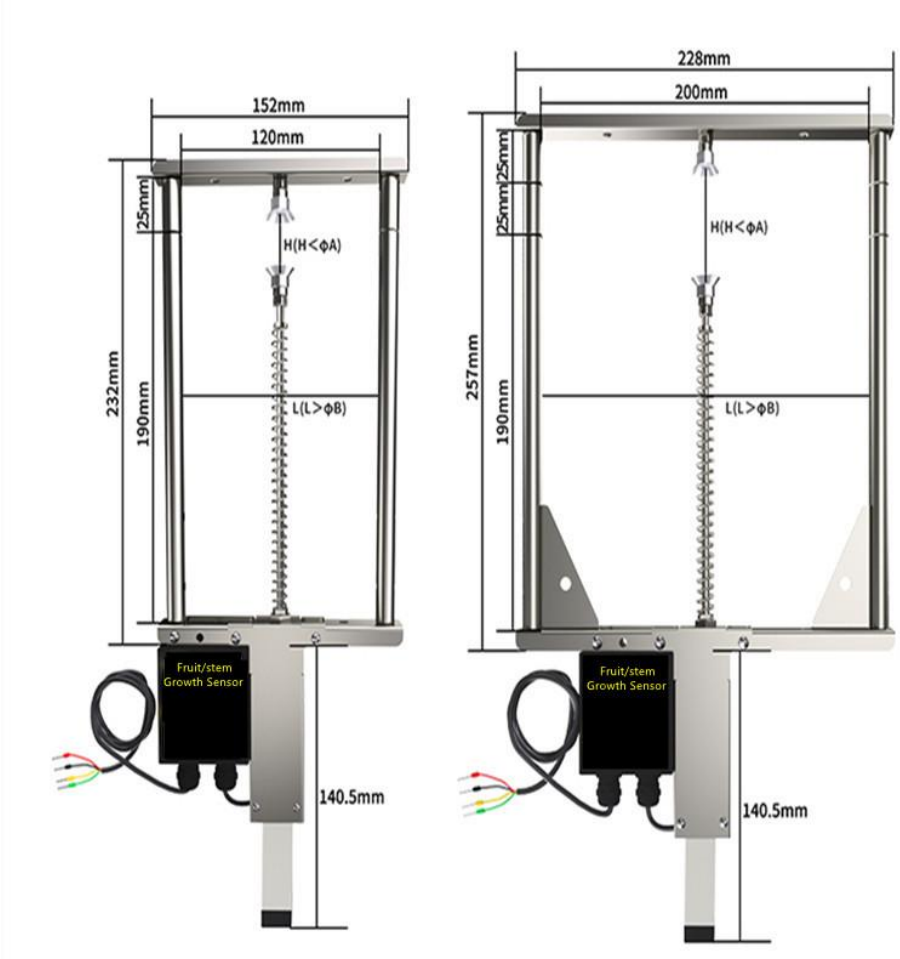
8. Use temperature range:-40 ℃ ~ 70 ℃

3.2 Impedance Requirements for Current Signals

Supply voltage	9V	12V	20V	24V
Maximum impedance	125 Ω	250 Ω	500 Ω	> 500 Ω

4. Instrument installation

4.1 Shape specification

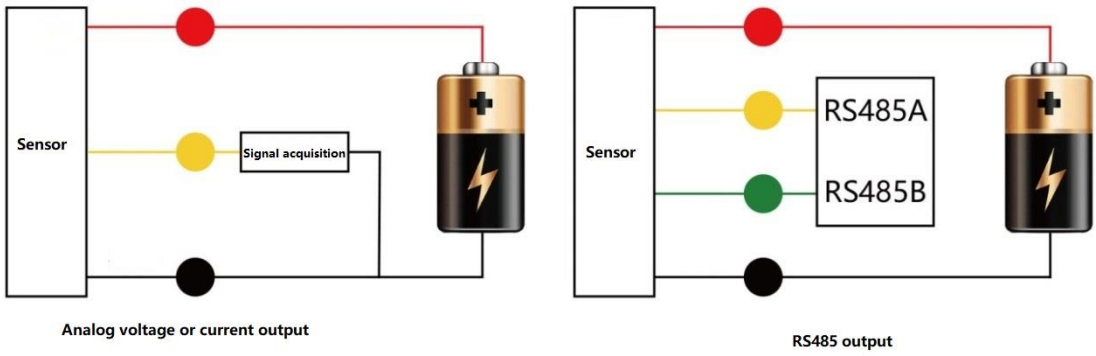


The initial diameter of the measurement stage is indicated by φ A, and the final diameter is indicated by φ B.

The growth value is expressed by S, and the conversion formula is S = φ B-φ A

4.2 Usage

The fruit/stem growth sensor can be connected with various data collectors, data acquisition cards, remote data acquisition modules and other equipment with differential input. The wiring description is as follows:



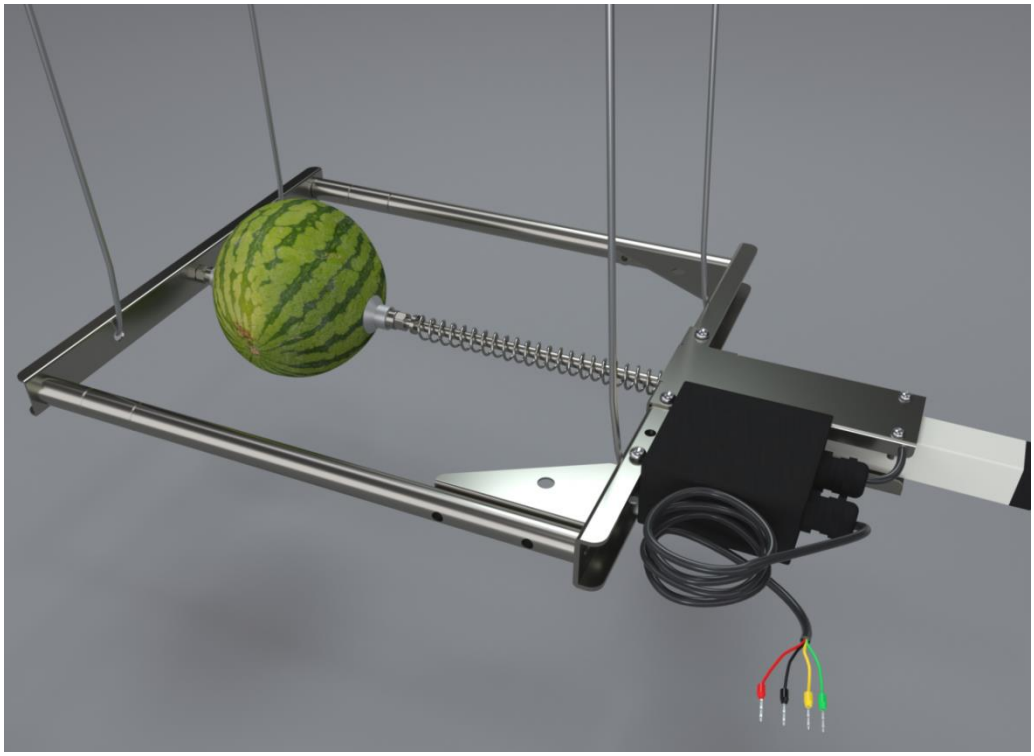
4.3 Installation mode

⚠ product is not waterproof. If it is used outdoors, please take rainproof measures.

The first step is to unscrew the screws on both sides of the upper support frame with an inner hexagon wrench. (As shown in the following figure)

The second step is to place the sensor at the position to be monitored, and then install the upper support frame. (As shown in the following figure)

The third step is to penetrate four fixing holes with iron wire and fix them on trees or fruits, or fix them with brackets to keep the sensor balanced. (As shown in the following figure)



5. Data output mode and algorithm

5.1 Analog output mode

Δ S: Growth value, unit: mm;

V: Voltage value collected by collector, unit: V;

A: The current value collected by the collector, unit: mA;

Output signal	Conversion method of each range		
	0 ~ 15mm	0 ~ 50mm	0 ~ 100mm
0 ~ 2V DC	Δ S = 7.5*V	Δ S = 25*V	Δ S = 50*V
0 ~ 5V DC	Δ S = 3*V	Δ S = 10*V	Δ S = 20*V
0 ~ 10V DC	Δ S = 1.5*V	Δ S = 5*V	Δ S = 10*V
4 ~ 20mA	Δ S = 0.9375*A-3. 75	Δ S = 3.125*A-12. 5	Δ S = 6.25*A-25

5.2 RS485 Signal (Default Address 01)

Standard Modbus-RTU protocol, baud rate: 9600; Check bit: None; Data bits: 8; Stop bit: 1

1. Address Modification

For example, the sensor with address 1 is changed to address 2, and the host →

slave

Original address	Function code	Start register high	Start register low	High starting address	Low starting address	Low CRC16	CRC16 High
0X01	0X06	0X00	0X30	0X00	0X02	0X08	0X04

If the sensor receives correctly, the data returns according to the original route.

Remarks: If you forget the original address of the sensor, you can use the broadcast address 0XFE instead. When using 0XFE, the host can only connect with one slave, and the return address is still the original address, which can be used as an address query method.

2. Clear Current Size Command

Address	Function code	Protocol address		Fixed character		Low CRC16	CRC16 High
0X01	0X06	0X00	0X55	0XAA	0XAA	0X67	0X05

If received correctly, return according to the original path, and the command of clearing the current size is completed.

3. Query Data

Query the data (growth value) of sensor (address 1), master → slave

Address	Function code	Start register address high	Start register address low	High register length	Low register length	Low CRC16	CRC16 High
0X01	0X03	0X00	0X00	0X00	0X01	0XC4	0X0B

If the sensor receives correctly, return the following data, slave → host

Address	Function code	Data length	Register 0 data high	Register 0 data low	Low CRC16	CRC16 High
0X01	0X03	0X02	0X04	0XD2	0X3A	0XD9
			Growth value: 12.34 mm			