REF: B31-A710

SN-GP2Y0A710K0F: SHARP Infrared Long Range Distance Sensor (100-550cm)

Description

The GP2Y0A710K0F infrared sensor is a long-distance distance sensor from SHARP, which takes a continuous distance reading and reports the distance as an analog voltage with a distance range of 1m to 5.5m. Simply provide power, ground and data to read the analog voltage signal that represents distances. This model of distance sensor is bigger in size compared to the other SHARP's distance sensor that you have normally seen.

Specifications

- Measuring distance range Min 100 to Max 550 cm
- Operating supply voltage 4.5 to 5.5 V
- Output terminal voltage: -0.3 to VCC+ 0.3
- Storage Temperature: -40C to + 70 C
- Average supply current: Min-0, Typ-30, Max-50
- Large format: 58.0×17.6×22.5 mm
- Part number of connector on sensor: B5B-ZR
- Part number recommended for connecting: 05ZR-3H-P

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Pin connection

ARDUINO PIN	SHARP Infrared PIN
5V	VIN
GND	GND
A0	A0

Circuit diagram

Formulas

These formulas are derived from the Sharp datasheets to compute distance.

The formula to translate SensorValue into Distance for Sharp 10-80cm analog sensors is:

Distance (cm) = 4800/(SensorValue - 20)

This formula is only valid over the SensorValue range 80-500.

The formula to translate SensorValue into Distance for Sharp 20-150cm analog sensors is:

Distance (cm) = 9462/(SensorValue - 16.92)

This formula is only valid over the SensorValue range 80-490.

The formula to translate SensorValue into Distance for Sharp 4-30cm analog sensor is:

Distance (cm) = 2076/(SensorValue - 11)

This formula is only valid over the SensorValue range 80-530.

For digital distance sensors, SensorValue will be greater than 200 if the distance of the object being measured is less that the detection distance of the sensor. Otherwise the SensorValue will be less that 200.
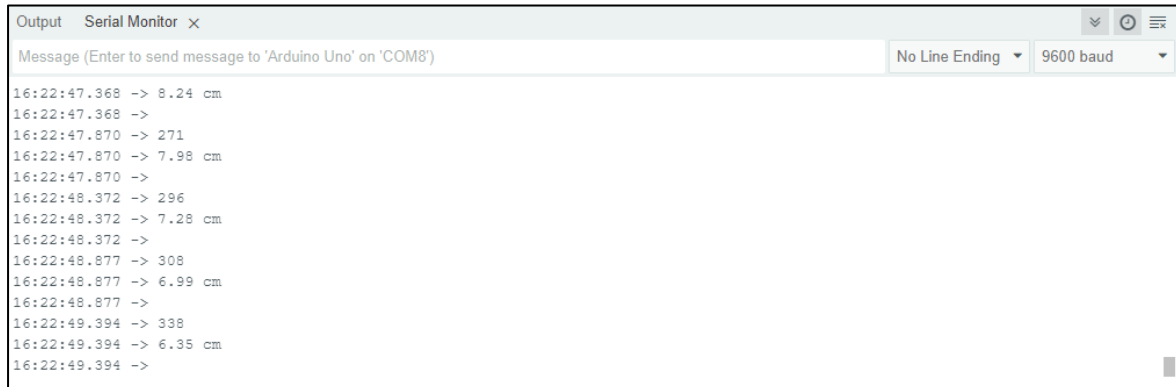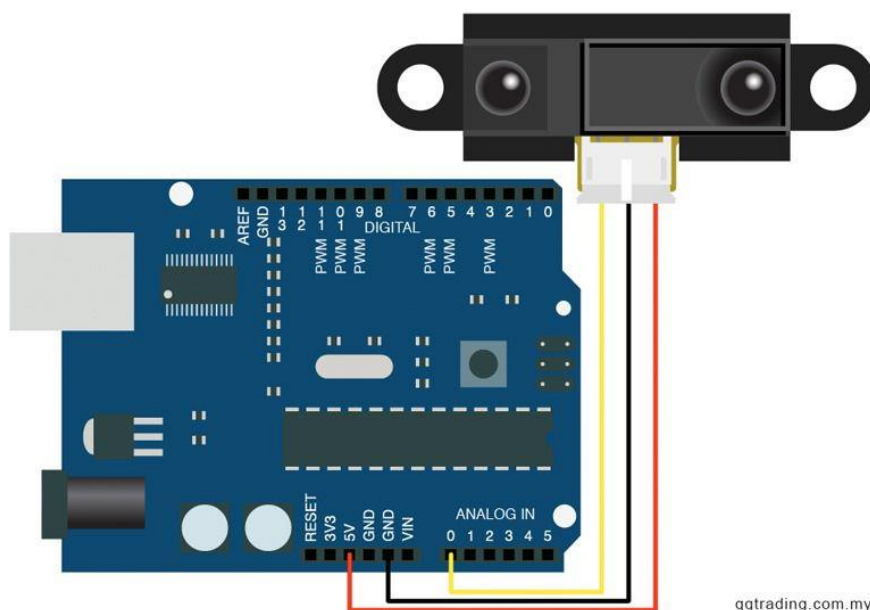

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Coding

```
1    #define pin A0
2
3  ∨ void setup(){
4          Serial.begin (9600);
5          pinMode(pin, INPUT);
6    }
7
8  ∨ void loop(){
9          uint16_t value = analogRead (pin);
10         double distance = get_IR (value);  //Convert the analog voltage to the distance
11         Serial.println (value);  //Print the data to the arduino serial monitor
12         Serial.print (distance);
13         Serial.println (" cm");
14         Serial.println ();
15         delay (500);   //Delay 0.5s
16   }
17
18   //return distance (cm)
19 ∨ double get_IR(uint16_t value){
20         if (value < 16)  value = 16;
21         return 2076.0 / (value - 11.0);
22   }
```

Result

View the result in serial monitor.

```
Output   Serial Monitor ×

Message (Enter to send message to 'Arduino Uno' on 'COM8')            No Line Ending ▾   9600 baud      ▾

16:22:47.368 -> 8.24 cm
16:22:47.368 ->
16:22:47.870 -> 271
16:22:47.870 -> 7.98 cm
16:22:47.870 ->
16:22:48.372 -> 296
16:22:48.372 -> 7.28 cm
16:22:48.372 ->
16:22:48.877 -> 308
16:22:48.877 -> 6.99 cm
16:22:48.877 ->
16:22:49.394 -> 338
16:22:49.394 -> 6.35 cm
16:22:49.394 ->
```

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