

SEED TECHNOLOGY INC (SEEEDUINO)

Grove - 80cm Infrared Proximity Sensor

Model: SEN39046P

Introduction

The 80cm Infrared Proximity Sensor is a General Purpose Type Distance Measuring Sensor. This sensor SharpGP2Y0A21YK, boast a small package, Very little current consumption, takes a continuous distance reading and returns a corresponding analog voltage with a range of 10cm (4") to 80cm (30"). Can be used in TVs, Personal computers, Cars and so on.



Features

- Grove compatible interface
- Wide supply voltage range: 2.5V–7V

Application Ideas

- Waterdrop conservation
- Toys
- Robotics

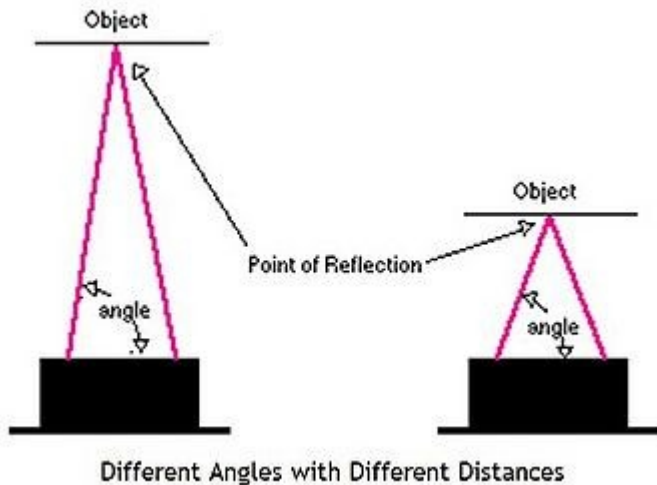
Interface

This sensor is quite small and use a tiny connector called the Japan Solderless Terminal (JST) connector. These connectors have three wires: ground, vcc, and the output signal. Because this sensor fire continuously and don't need any clock to initiate a reading cycle, it is easy to interface with any mirocontroller. For the Arduino&Seeeduino, We prepared a 4-pin to 3-pin wire to convert the 3-pin connector on the sensor to 4-pin connector on the Grove Base Shield, to compatible with the seeeduino Grove interface.

Theory of Operation

This new rangers use triangulation and a small linear CCD array to compute the distance and/or presence of objects in the field of view. The basic idea is this: a pulse of IR light is emitted by the emitter. This light travels

out in the field of view and either hits an object or just keeps on going. In the case of no object, the light is never reflected and the reading shows no object. If the light reflects off an object, it returns to the detector and creates a triangle between the point of reflection, the emitter, and the detector.



The angles in this triangle vary based on the distance to the object. The receiver portion of these new detectors is actually a precision lens that transmits the reflected light onto various portions of the enclosed linear CCD array based on the angle of the triangle described above. The CCD array can then determine what angle the reflected light came back at and therefore, it can calculate the distance to the object.

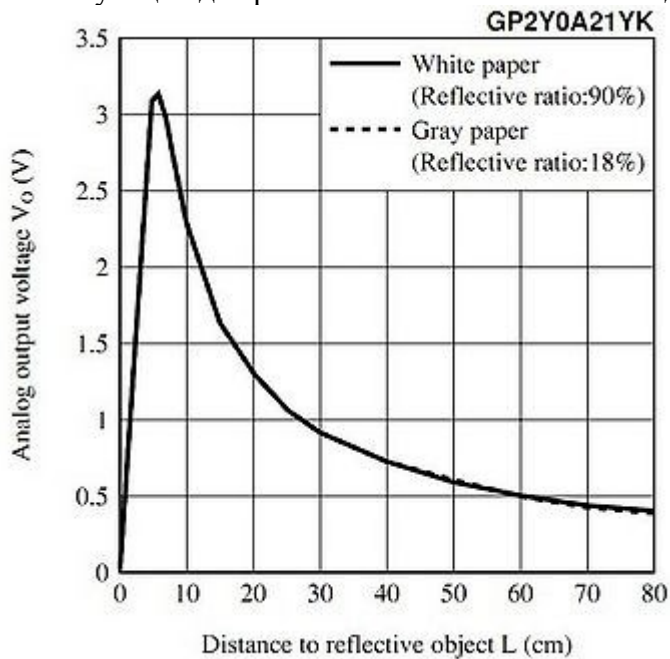
This new method of ranging is almost immune to interference from ambient light and offers amazing indifference to the color of object being detected. Detecting a black wall in full sunlight is now possible.

Key Specification

Item	Minimum	Typical	Maximum
Operate Voltage	2.5V	5V	7V
Output Voltage(80cm)	0.25V	0.4V	0.5V
Average supply current	-	33mA	50mA
Communication Protocol	analog read		

Non-Linear Output

Because of some basic trigonometry within the triangle from the emitter to reflection spot to receiver, the output of the detector is non-linear with respect to the distance being measured.



Usage

The Infrared Proximity sensor is easy to use: Connect the 3-pin connector to the sensor, And connect the 4-pin connector to the Grove Base Shield, Then you can analog read the voltage, Which indicate the distance from the object in front to this sensor, from the third wire(The yellow wire). The relationship between the voltage readed and the distance as shown above: **Non-Linear Output**

Hardware Installation

Programming

Includes important code snippet. Demo code like :

Demo code

```
{
const int analogInPin = A1; // Analog input pin that is attached to
int sensorValue = 0; // value read from the pot
void setup() {
// initialize serial communications at 9600 bps:
Serial.begin(9600);
}

void loop() {
int sum =0;
// read the analog in value:
for (int i =0;i<20;i++)
{
sensorValue = analogRead(analogInPin);
sum =sum +sensorValue;
}
sensorValue= sum / 20 ;

// print the results to the serial monitor:
Serial.print("sensor voltage = " );
Serial.print(sensorValue*3.3/1024);
// wait 500 milliseconds before the next loop
delay(500);
}
}
```

Example

The projects and application examples.

Bill of Materials (BOM) /parts list

All the components used to produce the product.

FAQ

Please list your question here:

Support

If you have questions or other better design ideas, you can go to our [forum](#) or [wish](#) to discuss.

Version Tracker

Revision	Descriptions	Release
v0.9	Initial public release	3/03/2011

Bug Tracker

Bug Tracker is the place you can publish any bugs you think you might have found during use. Please write down what you have to say, your answers will help us improve our products.

Additional Idea

The Additional Idea is the place to write your project ideas about this product, or other usages you've found. Or you can write them on Projects page.

Resources

The resources need to be downloaded, like Eagle file, Demo code, project or other datasheet.

See Also

Other related products and resources.

Licensing

This documentation is licensed under the Creative Commons [Attribution-ShareAlike License 3.0](#) Source code and libraries are licensed under [GPL/LGPL](#), see source code files for details.