

# keyestudio

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## Keyestudio SR01 Ultrasonic Sensor



### Introduction:

The Keyestudio SR01 Ultrasonic is a very affordable proximity/distance sensor that has been used mainly for object avoidance in various robotics projects.

It essentially gives your Arduino eyes / spacial awareness and can prevent your robot from crashing or falling off a table.

It has also been used in turret applications, water level sensing, and even as a parking sensor.

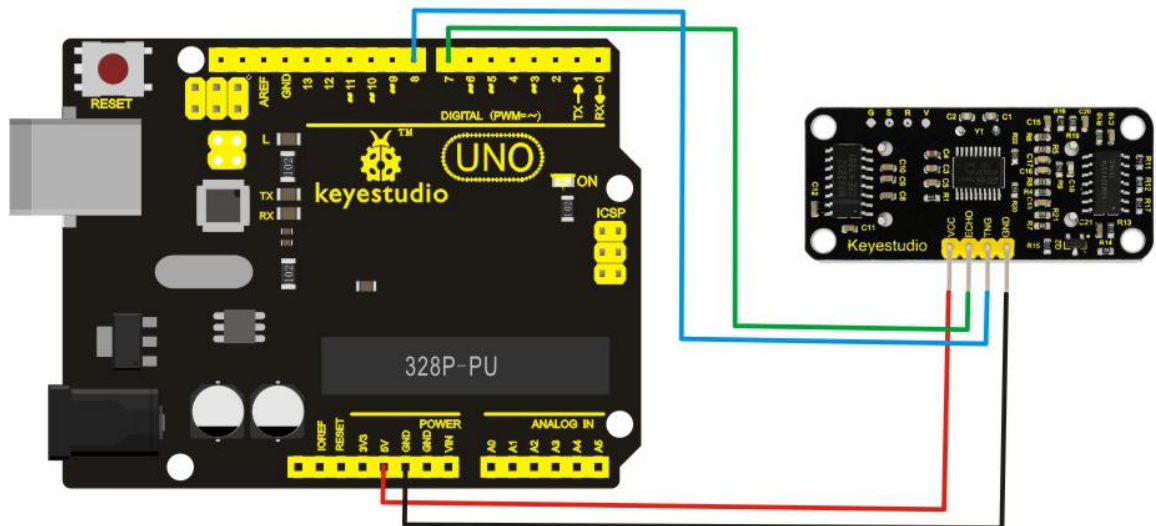
This simple project will use the keyestudio SR01 Ultrasonic Sensor with an Arduino and a Processing sketch to provide a neat little interactive display on your computer screen.

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## Specification:

- Working Voltage: DC 5V
- Working Current: 15mA
- Working Frequency: 40KHz
- Max Range: 3--5m
- Min Range: 2cm
- Measuring Angle: 15 degree
- Trigger Input Signal: 10 $\mu$ S TTL pulse

## Connection Diagram:



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SR01 Ultrasonic Sensor	UNO Board
VCC	5V
GND	GND
Echo	Digital Pin 7
Trig	Digital Pin 8

## Sample Code:

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```
#define echoPin 7 // Echo Pin
```

```
#define trigPin 8 // Trigger Pin
```

```
#define LEDPin 13 // Onboard LED
```

```
int maximumRange = 200; // Maximum range needed
```

```
int minimumRange = 0; // Minimum range needed
```

```
long duration, distance; // Duration used to calculate distance
```

```
void setup() {
```

```
    Serial.begin (9600);
```

```
    pinMode(trigPin, OUTPUT);
```

```
    pinMode(echoPin, INPUT);
```

```
    pinMode(LEDPin, OUTPUT); // Use LED indicator (if required)
```

```
}
```

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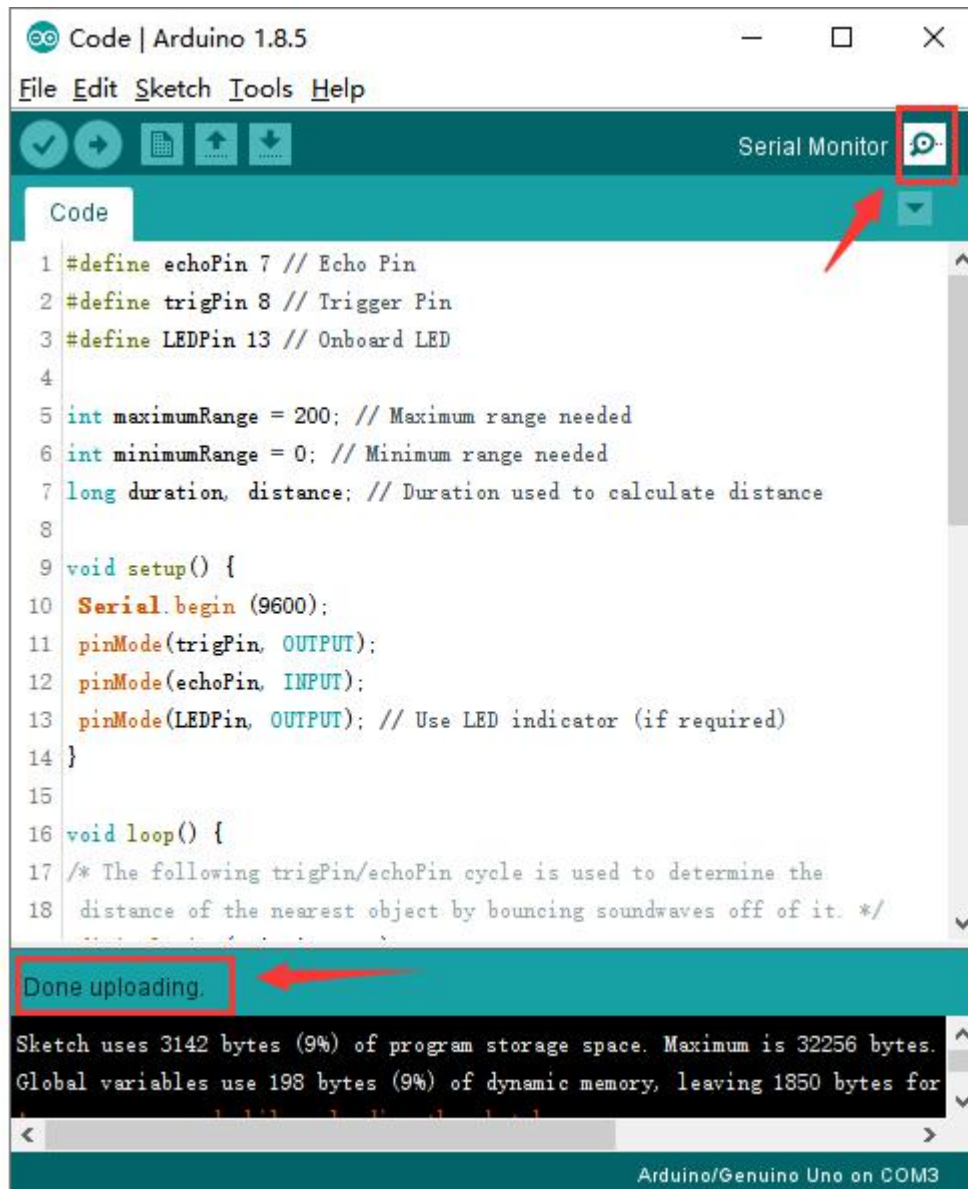
```
void loop() {  
  
  /* The following trigPin/echoPin cycle is used to determine the  
  distance of the nearest object by bouncing soundwaves off of it. */  
  
  digitalWrite(trigPin, LOW);  
  
  delayMicroseconds(2);  
  
  
  digitalWrite(trigPin, HIGH);  
  
  delayMicroseconds(10);  
  
  digitalWrite(trigPin, LOW);  
  
  
  duration = pulseIn(echoPin, HIGH);  
  
  
  //Calculate the distance (in cm) based on the speed of sound.  
  
  distance = duration/58.2;  
  
  
  if (distance >= maximumRange || distance <= minimumRange){  
  
    /* Send a negative number to computer and Turn LED ON  
    to indicate "out of range" */  
  
    Serial.println("-1");  
  
    digitalWrite(LEDPin, HIGH);  
  
  }  
}
```

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```
else {  
  
    /* Send the distance to the computer using Serial protocol, and  
    turn LED OFF to indicate successful reading. */  
  
    Serial.println(distance);  
  
    digitalWrite(LEDPin, LOW);  
  
}  
  
    //Delay 50ms before next reading.  
  
    delay(50);  
  
}  
  
*****
```

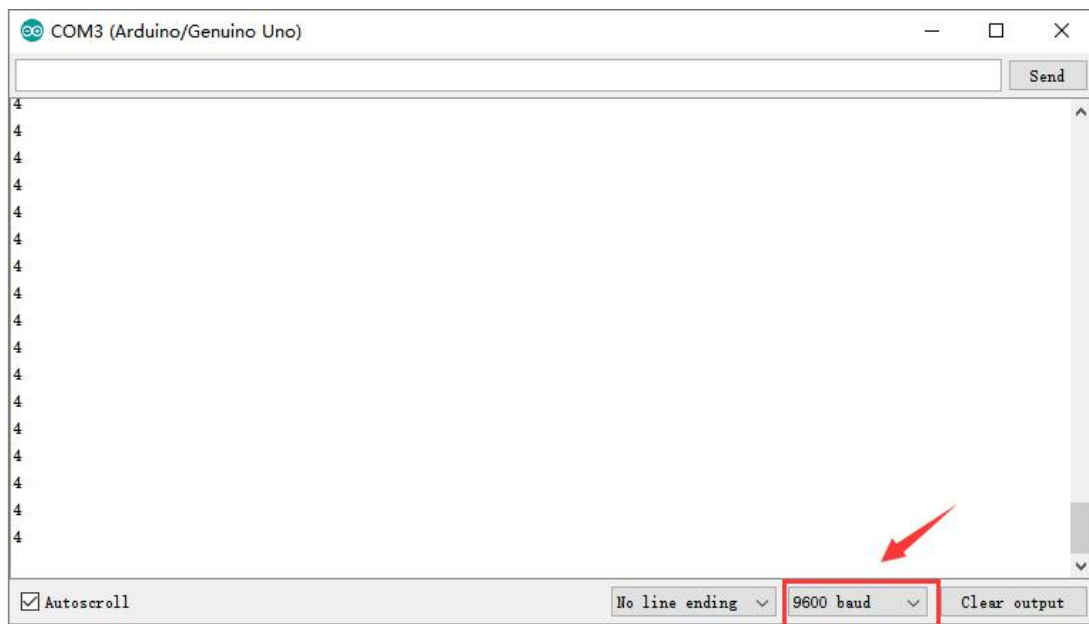
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After upload the code to the board, open the serial monitor of Arduino IDE, you can see the distance value measured by ultrasonic sensor.

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Resource

<https://fs.keyestudio.com/KS0206>