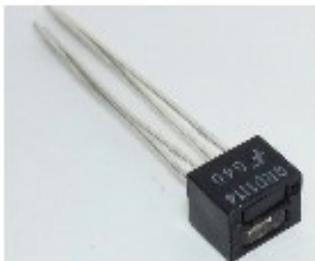


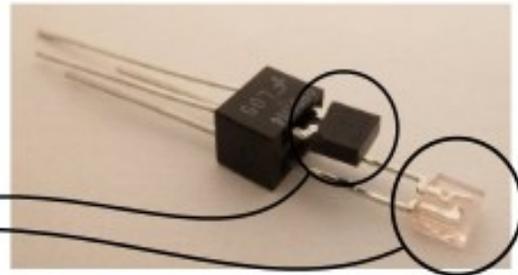
Reflective Sensor

- use a breadboard for connecting it to your Arduino
- use the **Arduino Serial Monitor** to see the analog input value change when an object approaches the sensor within a few centimeters.
- use your cell phone camera to see if the the sensor's IR LED is working correctly. Many cell phone cameras detect IR light, which is invisible to the naked eye.
- changing the number of 1kOhm resistors that are connected in parallel, the brightness level of the LED can be adjusted. Try that and see how it changes the sensor's response with regards to the distance of an object.



The reflective sensor QRD 1114 is actually two components in one housing:

- 1) phototransistor (dark)
- 2) infrared LED (light)



-  Polarity: The shorter leg on either component goes to ground.
-  Function: The LED emits IR light, and if an object is close enough and reflects that IR light, the transistor detects it.
-  Problems: - Incandescent lightbulbs emit IR too and can alter the actual signal.
 - If components slide even just a millimeter out of the common house, IR light will go directly from LED to transistor, instead of traveling by reflection. This is called "cross talk", and often overlooked as a cause of malfunction.

Sample Code: use with Serial Monitor

```
/*
  AnalogReadSerial
  Reads analog input on pin 0, prints the result to the serial monitor.

  This example code is in the public domain.
  */

void setup() {                                     // the setup routine runs once when you press reset:
  Serial.begin(9600);                               // initialize serial communication at 9600 bits per second:
}

void loop() {                                       // the loop routine runs over and over again forever:
  int sensorValue = analogRead(A0);                // read the input on analog pin 0:
  Serial.println(sensorValue);                     // print out the value you read:
  delay(1);                                         // delay in between reads for stability
}
```

Source:

Arduino IDE – File – Examples – Basics - “Analog Read Serial”

Sample Code: LED 13 flashes at speed determined by reflective object being close to sensor

Created by David Cuartielles
modified 30 Aug 2011
By Tom Igoe

This example code is in the public domain.

```
*/  
  
int sensorPin = A0;           // select the input pin  
int ledPin = 13;             // select the pin for the LED  
int sensorValue = 0;         // variable to store the value coming from the sensor  
  
void setup() {  
    pinMode(ledPin, OUTPUT); // declare the ledPin as an OUTPUT:  
}  
  
void loop() {  
    sensorValue = analogRead(sensorPin); // read the value from the sensor:  
    digitalWrite(ledPin, HIGH);         // turn the ledPin on  
    delay(sensorValue);                 // stop the program for <sensorValue> milliseconds:  
    digitalWrite(ledPin, LOW);          // turn the ledPin off:  
    delay(sensorValue);                 // stop the program for for <sensorValue> milliseconds:  
}
```

Source:

<http://arduino.cc/en/Tutorial/AnalogInput>