SHARP GP2Y0A41SK0F IR ranger sensor (4-30cm) SKU: SEN0143

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Specifications
- Output: analog output
- Detection Range: 4-30cm
- Voltage: 4.5～5.5V
- Current: 33mA
- Size: 40x20x13.5 mm

formulas
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.

Connection Diagram
Sample Code

```c
/******** start code ********/
/*
* created 2013-07-29
* by lisper (leyapin@gmail.com)
* function test GP2Y0A41SK0F
*/

//connect gp2d120x to A1
#define pin A1

void setup () {
  Serial.begin (9600);
  pinMode(pin, INPUT);
}

void loop () {
  uint16_t value = analogRead(pin);
  double distance = get_gp2d120x (value); //Convert the analog voltage to the distance
  Serial.println (value);                   //Print the data to the arduino serial monitor
  Serial.print (distance);
  Serial.println (" cm");
  Serial.println ();                         //Delay 0.5s
  delay (500);
}

//return distance (cm)
double get_gp2d120x (uint16_t value) {
  if (value < 16) value = 16;
```

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return 2076.0 / (value - 11.0);

/******* end code *******/

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