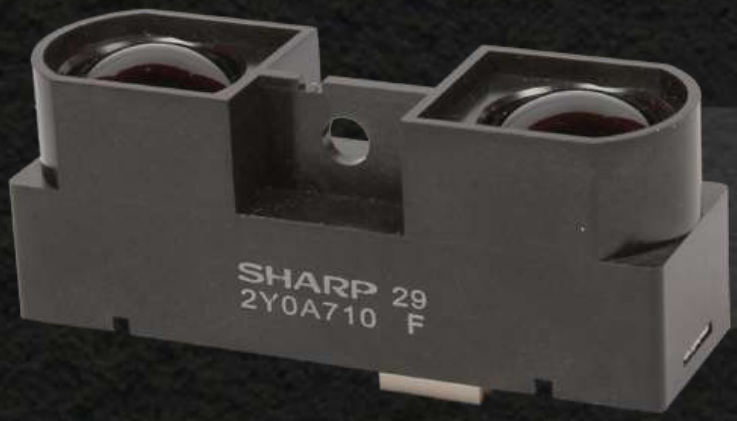
Phi Robotics

Product Manual



Sharp IR Sensor
GP2Y0A710K0F

Version 1.1

Phi Robotics Research Pvt. Ltd.

www.phi-robotics.com

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1 Introduction

Sharp GP2Y0A710K0F IR sensor is distance measuring unit, can be used for obstacle detection for robots. It has measuring range of 100 to 550 cm. The sensor gives output voltage proportional to the distance measured. The sensor adopts triangulation method hence cannot be easily influenced by variety of reflectivity of object or ambient temperature and provides reliable readings. The module can be used in obstacle detection for robots, sensor for energy saving, amusement equipment (like arcade game machine) and many such applications. Its high obstacle detection range makes this sensor an excellent alternative to sonar in some applications.

2 Features

- Composed of integrated combination of PSD (position sensitive detector), IR LED (Infrared light emitting diode) and signal processing circuit
- Small, compact size and easy to use

3 Specifications

- Operating voltage: 5V
- Distance measuring range: 100 to 550 cm (~3 to18 ft.)
- Current consumption: 30 mA
- Output type: analog voltage

4 Hardware Connections

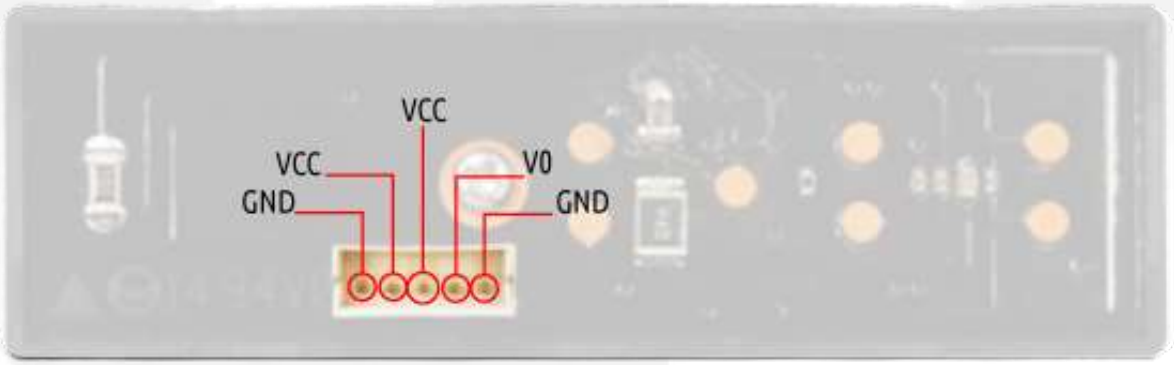

Figure 1 - GP2Y0A710K0F pin layout

Sharp GP2Y0A710K0F IR sensor has JST ZHR-5 type connector. Figure 1 shows the pin layout for the sensor. It has two pairs of supply lines and provides analog voltage output through Vo pin which can be read by microcontroller ADC. Obstacle distance can be calculated from output voltage using following equation.

$$Distance\ (mm) = \frac{1420000}{Output\ voltage\ (mV) - 1091}$$

5 Pseudo Code

```
uint32_t sharpGetDistance(void)
{
	uint32_t adc_mv;
	uint32_t distance_mm;
	//read voltage output from Sharp IR sensor from ADC
	// assuming adcGetVoltage function provides value in millivolts
	adc_mv = adcGetVoltage();
	// calculate distance in milli-meters from the ADC value
	distance_mm = 1420000/( adc_mv - 1091);
	return distance_mm;
}
```

6 Reference

GP2Y0A710K0F Datasheet: http://www.sharpsma.com/webfm_send/1208

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