

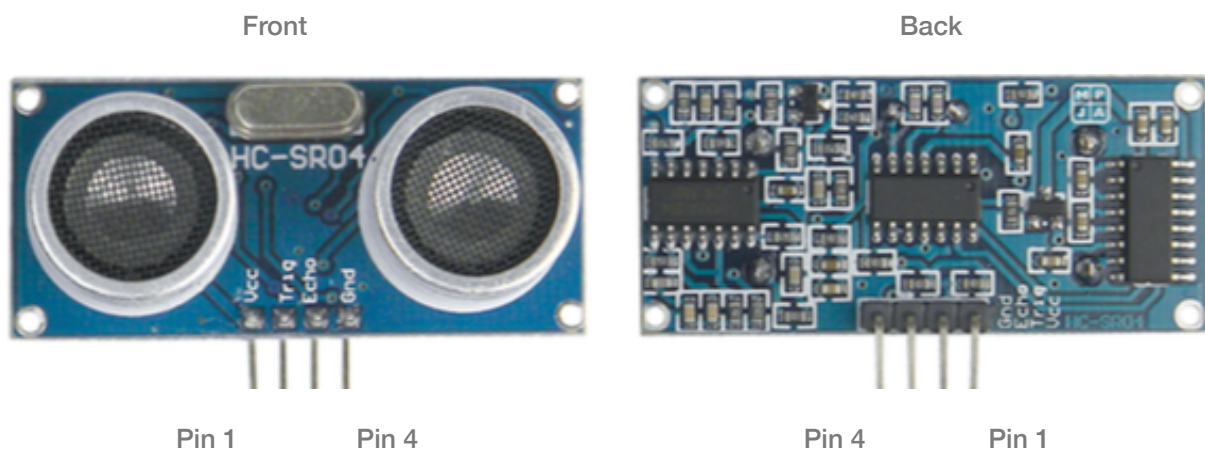
HC-SR04 Ultrasonic Module

Summary

This module is a complete ultrasonic measuring device which can easily be interfaced with micro controllers such as the Arduino series of devices.

When triggered, the transmitter emits a burst of 8 pulses of a directional ultrasonic wave and a timer is started at the same instance. The ultrasonic signal travels outward from the module and on encountering an obstacle a portion will be reflected back towards the module. On the receiver detecting the returned wave, the timer is stopped. The recorded time period is proportional to the distance from the sensor and the obstacle. The timer pulse is output for measurement by a connected device such as an Arduino.

Product Views

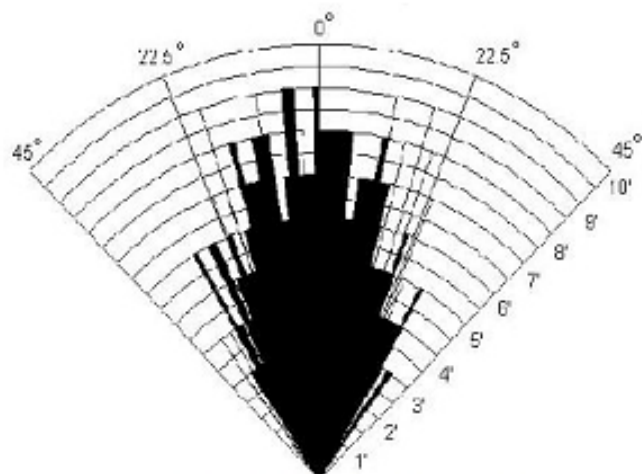
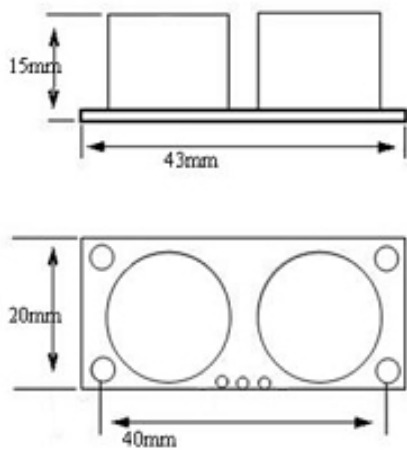


Module Connections

Pin No.	Designation	Description
1	Vcc	Power supply +5V
2	Trig	Trigger input
3	Echo	Output Pulse
4	And	Power supply common

Specifications

Parameter	Rating
Operating voltage	5 V DC
Quiescent current	< 2 mA
Operating frequency	40 kHz
Measuring angle	15 degree
Maximum range	500 cm
Minimum range	2 cm
Resolution	1 cm



*Practical test of performance,
Best in 30 degree angle*

Module Operation

Initiate measurement by sending a minimum 10 us TTL high pulse to the Trig input.

The module will send a pulse stream of 8 40 kHz ultrasonic pulses.

The module will respond with a pulse on the echo pin that is proportional to the distance based on the formula below.

$$\text{distance (cm)} = \text{pulse width} / 58$$

$$\text{distance (inch)} = \text{pulse width} / 148$$

If not obstacle is detected the pulse length will be 38ms.

Cycle time between initiating measurements should not be less than 50 ms.

Sequence Chart

