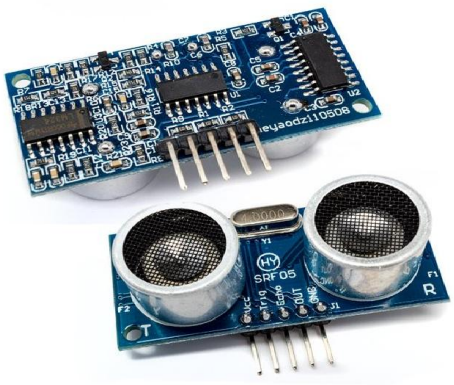
HY-SRF05 Precision Ultrasonic Sensor



An ultrasonic ranging sensor with slightly better accuracy.

Ultrasonic sensors overcome many of the weaknesses of IR sensors - they provide distance measurement regardless of color and lighting of obstacles.

They also provide lower minimum distances and wider angles of detection to gaurantee that obstacles are not missed by a narrow sensor beam.

THIS particular model is an upgrade from the lower precision HC-SRO4. This has 5 pins and can be used in 1-pin trigger/echo or 2-pin.

The SRF05 UltraSonic range finder lets you find the distance of the objects in front of it. It does that by sending ultrasonic pulses and measures the time it takes for the pulses to travel to the obstacle
and back.

Ultrasonic ranging module HY-SRF05 provides 2cm - 400cm non-contact measurement function, the ranging accuracy can reach to 3mm. The module includes transmitters, receiver and control circuit.

The SRF05 is an evolutionary step from the SRF04, and has been designed to increase flexibility, increase range, and to reduce costs still further. As such, the SRF05 is fully compatible with the SRF04. Range is increased from 3 meters to 4 meters. A new operating mode (tying the mode pin to ground) allows the SRF05 to use a single pin for both trigger and echo, thereby saving valuable pins on your controller. When the mode pin is left unconnected, the SRF05 operates with separate trigger and echo pins, like the SRF04. The SRF05 includes a small delay before the echo pulse to give slower controllers such as the Basic Stamp and Picaxe time to execute their pulse in commands.

the module performance is stable, measure the distance accurately:

Can and SRF05, SRF02 ultrasonic distance measuring module and other comparable. Module precision, blind spots (2cm) super close, stable ranging success of this product to market under the strong!

Pins Details

5-Pin, One each for VCC, Trigger, Echo, Out and Ground.

Trig : Plusing a HIGH on this pin will send a Pulse
Echo : The pulse length is propotional to the distance from the obstacle
(100usec to 25ms, times out if 30ms)

Specifications

Check the datasheet for details and graphs but these are the highlights:

- **Trigger Pin Format:** 10 uS digital pulse
- **Sound Frequency:** 40 kHz
- **Echo Pin Output:** 0-Vcc
- **Echo Pin Format:** output is DIGITAL and directly proportional with range. See our conversion formula above.
- **Measurement Range:** 2cm to ~4.5m
- **Measurement Resolution:** 0.3cm
- **Measurement Angle:** up to 15 deg
- **Measurement Rate:** 40 Hz
- **Supply Voltage:** 4.5V to 5.5V
- **Supply Current:** 10 to 40mA
- **Connector:** standard 5-pin male connector which can plug directly into breadboards.
- **Static current :** less than 2mA

- **Detection distance:** 2cm-450cm

Usage:

10US a control population of more than a high-fat, you can wait to receive high output port. A timer can be opened with the output timing, when the port goes low when the timer value can be read this when the time for this distance, only calculate the distance. This constant cycle of measurement, you can reach the value of the mobile measurement

The basic principle of work:

- Using I/O trigger for at least 10us high level signal
- The module automatically sends eight 40KHz and detect whether there is a pulse signal back
- If the signal back, through high level, time of high output IO duration is the time from sending ultrasonic to returning
- Test distance = high level time x velocity of sound (340m/s) / 2
- Display Format: 16 Characters x 2 lines

Measurement Procedure & Formula

Distance measurements can be made with microcontrollers in a straightforward manner:

You can find an Arduino Library with code here: http://forum.arduino.cc/index.php?topic=106043.0

- Send a 10 uS wide pulse to the sensor on the Trigger Pin. The sensor will automatically send out a 40 kHz wave.
- Begin monitoring the output from the Echo Pin and
- When the Echo Pin goes high, begin a timer.
- When the Echo Pin goes low, record the elapsed time from the timer and use the following conversion formula:

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Distance (in cm) = (elapsed time * sound velocity (340 m/s)) / 100 / 2
```

Note: we divide distance by 2 because the sensor returns the round trip time, which doubles the distance measurement.