**PING))) Ultrasonic Distance Sensor**

**Ultrasonic distance sensor provides precise, non-contact distance measurements from about 2 cm (0.8 inches) to 3 meters (3.3 yards). It is very easy to connect to microcontrollers such as the BASIC Stamp®, Propeller chip, or Arduino, requiring only one I/O pin.**

**The PING))) sensor works by transmitting an ultrasonic (well above human hearing range) burst and providing an output pulse that corresponds to the time required for the burst echo to return to the sensor. By measuring the echo pulse width, the distance to target can easily be calculated.**

**Features**

**Range: 2 cm to 3 m (0.8 in to 3.3 yd)**

**Burst indicator LED shows sensor activity**

**Bidirectional TTL pulse interface on a single I/O pin can communicate with 5 V TTL or 3.3 V CMOS microcontrollers**

**Input trigger: positive TTL pulse, 2 µs min, 5 µs typ.**

**Echo pulse: positive TTL pulse, 115 µs minimum to 18.5 ms maximum.**

**RoHS Compliant**

**Key Specifications**

**Supply voltage: +5 VDC**

**Supply current: 30 mA typ; 35 mA max**

**Communication: Positive TTL pulse**

**Package: 3-pin SIP, 0.1” spacing (ground, power, signal)**

**Operating temperature: 0 – 70° C.**

**Size: 22 mm H x 46 mm W x 16 mm D (0.84 in x 1.8 in x 0.6 in)**

**Weight: 9 g (0.32 oz)**

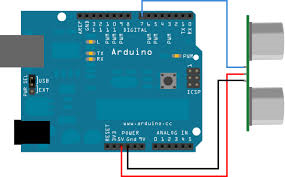
**Communication Protocol**

**The PING))) sensor detects objects by emitting a short ultrasonic burst and then "listening" for the echo. Under control of a host microcontroller (trigger pulse), the sensor emits a short 40 kHz (ultrasonic) burst. This burst travels through the air, hits an object and then bounces back to the sensor. The PING))) sensor provides an output pulse to the host that will terminate when the echo is detected, hence the width of this pulse corresponds to the distance to the target.**

**Object Positioning**

**The PING))) sensor cannot accurately measure the distance to an object that: a) is more than 3 meters away, b) that has its reflective surface at a shallow angle so that sound will not be reflected back towards the sensor, or c) is too small to reflect enough sound back to the sensor. In addition, if your PING))) sensor is mounted low on your device, you may detect sound reflecting off of the floor.**

**CONNECTION OF PING**



**Commands/function used to write code**

**1)Serial-This function establishes a coonection between the Arduino and the computer.**

**2)pinMode()-This function establishes or tells the computer about the input and out location of the pins in Arduino**

**3)digitalWrite()-Basically this function enables the Arduino to fluctuate the voltage from 0V to 5V with high and low values.**

**4)delayMicroseconds()-Basically it delays the execution by the specified seconds.**

**5)pulseIn()-waits for the pin to go HIGH, starts timing, then waits for the pin to go LOW and stops timing. Returns the length of the pulse in microseconds.**

**6)Serial.print()-Print the output on the serial monitor on the screen.**