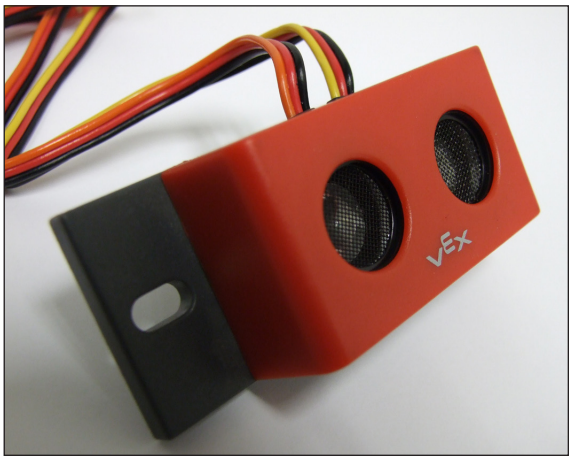
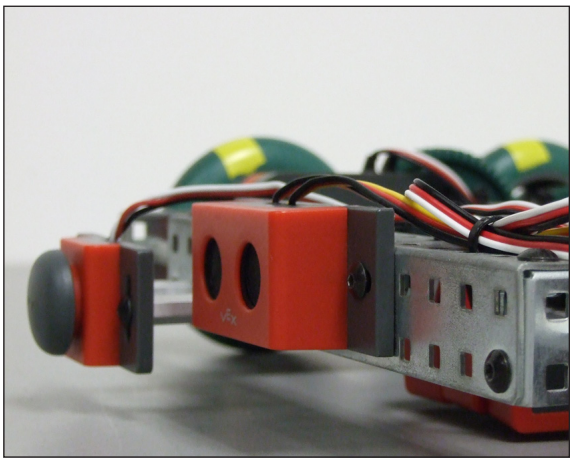
Ultrasonic Rangefinder Overview



The Ultrasonic Rangefinder for VEX

The Ultrasonic Rangefinder, pictured left, is used to detect objects at a distance, without the need for the robot to actually contact them. The Ultrasonic Rangefinder uses sound pulses to measure distance, in a similar way to how bats or submarines find their way around. By emitting an ultrasonic pulse and timing how long it takes to hear an echo, the Ultrasonic Rangefinder can accurately estimate how far away the object is.



Example of an Ultrasonic Rangefinder attachment

This sensor is most often used in obstacle detection. It can detect objects at a range of up to 255 inches (approximately 647 centimeters), but this range can be limited in certain environments. Since the Ultrasonic Rangefinder relies on sound waves, any surfaces that absorb or deflect sound, such as cushioned surfaces or sharp angles.

When wiring the Ultrasonic Rangefinder to the Cortex, both wires are plugged into adjacent digital sensor ports. For the sensor to work properly, the "INPUT" wire must be in the lower numbered slot, and the "OUTPUT" wire in the higher numbered slot. For example, one working configuration is having the "INPUT" wire in digital port 8, and the "OUTPUT" wire in digital port 9.

Note: The units that the Ultrasonic Rangefinder uses (inches, centimeters, etc.) are controlled by the user in the "Motors and Sensors Setup" window.

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Ultrasonic Rangefinder

Natural Language Sample Code

Move Forward Until Near
This code has the robot move forward until the Ultrasonic Rangefinder sees an object within 20 units.

```
task main ()
{
 robotType(recbot);    //Specifies the robot type

 forward(63);          // Move forward at speed 63.
 untilSonarLessThan(20, dgtl8);    // Wait for the Ultrasonic
                                   //Rangefinder in digital ports
                                   //8 and 9 to see an object
                                   //within 20 units
 stop();               // Stop.
}
```

Move Backward Until Far
This code has the robot move backward until the Ultrasonic Rangefinder sees that the object is greater than 20 units away.

```
task main ()
{
 robotType(recbot);    //Specifies the robot type

 backward(63);         // Move backward at speed 63.
 untilSonarGreaterThan(20, dgtl8);  // Wait for the Ultrasonic
                                    //Rangefinder in digital
                                    //ports 8 and 9 to see an
                                    //object greater than 20
                                    //units away
 stop();                // Stop.
}
```

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