

## Reference

# Line Tracking Sensor Overview



**The Line Tracking Sensor for VEX**

The VEX Line Tracking Sensor allows the robot to tell objects or surfaces apart based on how dark or light they are. It shines a beam of infrared light out onto the object, and measures how much light is reflected back.

The Line Tracking Sensor is an analog sensor, and it returns values in the range of 0 to 4095. Darker objects reflect less light, and are indicated by higher numbers. Lighter objects reflect more light, and are indicated by lower numbers.



**An array of Line Tracking Sensors on a Vex Robot**

The Line Tracking Sensor is most useful for detecting a contrast between dark and light objects. This makes it particularly well suited for tracking dark lines on light surfaces. The VEX Line Tracker kit currently comes as a set of three Line Tracking Sensors, which allows for even more accurate line following and a greater ability to handle curved paths and corners.

For best results when using the Line Tracking Sensors, it is best to mount the sensors between 1/8 and 1/4 of an inch away from the surface it is measuring. It is also important to keep lighting in the room consistent, so sensors' readings remain accurate.

**Note:** Remember that it is important to calibrate your Line Tracking Sensors by calculating a threshold value. For more help on calculating thresholds, see the "Thresholds" reference document.

## Reference

# Line Tracking Sensor Natural Language Sample Code

### Forward Until Dark

This code has the robot use a Line Tracking Sensor to move forward until it senses a dark object, such as a dark line on a white background. This code uses a Line Tracking Sensor that is wired to Analog Port 2.

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

  forward(63); //Move forward at power level 63
  untilDark(500); //Wait until the Line Tracking Sensor sees
                  // a dark line. The threshold value is 500

  stop(); // Stop.
}
```

### Triple Line Sensor Tracking

This code has the robot make use of three Line Tracking Sensors to follow a line. This sample code uses a Shaft Encoder on the right wheel that is wired to Digital Ports 1 and 2, a Shaft Encoder on the left wheel that is wired to Digital Ports 3 and 4, and assumes that the Line Tracking Sensors are arranged in a line across the front of your robot, similar to the second picture above. The left Line Tracking Sensor should be wired to Analog Port 1, the middle sensor to Analog Port 2, and the right sensor to Analog Port 3.

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

  lineTrackForRotations(3.75, 500);
  /* Has the robot follow a line for 3.75 rotations using a
     threshold value of 500. The number of rotations is counted
     for both encoders; whenever either encoder counts to 3.75
     rotations, the robot will stop following the line. */

  stop(); // Stop.
}
```