

Lab Activity 5

Using Squarebot to Work with the Transmitter's Trim Option

Overview: The Vex transmitter allows the user to edit several of its functions. With experience, it is possible to greatly change the robot's behavior using the transmitter options alone. In this investigation, you will learn how to use the trim menu to and the trim channel buttons to gain greater control with your transmitter.

Upon completion of this activity the student will be able to:

- Work within the transmitter options menu
- Use the transmitter menu to alter Squarebot's response to joystick control
- Explain how to use the transmitter's trim option
- Use the trim option to establish optimum control settings for a variety of purposes

Materials needed:

- Squarebot
- Radio control transmitter

5.0 Using the Trim Option

5.1

Hold down Mode and Select simultaneously to enter the transmitter menu.

5.2

Press Mode until the word TRIM appears on the transmitter screen.

5.3

The select button allows you to choose the channel that you wish to edit. Let's work with channel 3. Which joystick axis corresponds to channel 3?



5.4

Press the Data Input button in the positive direction and change the numeric value to +100. Record the behavior of the motors.

5.5

Press the left joystick up only a small amount. What happened?

5.6

Allow the left joystick to return to its resting position. Slowly push the joystick up and note the speed and direction of the motor from the resting position all the way to the joystick's maximum upward reach.

5.7

Press the Data Input button in the negative direction and change the numeric value to -100. Observe the behavior of the motors.

5.8

Slowly push the left joystick down and note the speed and direction of the motor from the resting position of the joystick all the way to the joystick's maximum downward reach.

5.9

Plug one of the motors into motor port 1.

5.10

Use the Trim menu to edit the settings for channel 1. Experiment with the right joystick's horizontal axis, and observe the motor's response.

5.11

Can you guess the function of the TRIM menu? It may be hard to tell at this point.

5.12

Reset the transmitter to its default settings.

5.13

Hold down Mode and Select simultaneously to exit the transmitter menu.

5.14

Return your motors to motor ports 2 and 3.

5.15

Find the four buttons on the transmitter that are closest to the joysticks. They should be labeled CH.1, CH.2, CH. 3, and CH. 4.

5.16

Press the CH. 3 button and hold it down in either direction. What happens on the transmitter screen? What happens to the motors?

5.17

Each press of the button changes the value of the trim menu by a certain increment. Within the TRIM feature of the transmitter menu, by what increment does each press of the Data Input button change the numeric value?

5.18

When using the buttons near the joysticks, by what increment does each button press change the numeric value?

5.19

Which method allows for finer control?

The TRIM menu allows the user to select the center point of the joysticks, which is the location that will call for zero output from the motors. In most cases, you will want the joysticks' resting positions to be the center points, so that your robot will not be moving when you aren't touching the joystick.

5.20

Imagine you purchased a faulty transmitter that caused Squarebot to move even when you were not pressing the joysticks. In technical terms, describe how you would use the transmitter's menu options to attempt to solve the problem.

5.21

Now, assume you have a transmitter that works correctly. Describe a robot, task, or situation where it would be helpful to set the center point as something other than the joystick's resting position. You may have to be creative!

5.22

Reset your transmitter settings when you are done experimenting.

5.23

Hold down Mode and Select simultaneously to exit the transmitter menu.