



FRC[®]

FIRST[®] Robotics Competition

Basic Operator Control
2011 FRC – *LogoMotion*

BASIC OPERATOR CONTROL

Confirmation of “Tank Drive” Control System Component Operation

Before powering on the “benchtop” system, ensure that the motors are located in such a way that if they were to become immediately operational, they would not pose a safety hazard. Also ensure the joysticks plugged into the Driver Station are ‘centered’.

1. Move the joystick #1 Z-Wheel to the down position [-].
2. Power up the Classmate Driver Station and the benchtop system.
3. Set the Classmate Driver Station to “Operation > Enable”. When enabled, the Jaguar LEDs should be solid yellow (assuming that the joystick inputs are centered.)
4. The “benchtop” system is now configured so that the two joysticks should give “tank drive” behavior. For an “out of the box” cRIO, you should observe the following behavior:
 - a. Move joystick #2 all the way forward. The Jaguar connected to PWM #1 should have its LED change color to green and the motor connected to that Jaguar should turn forward.
 - b. Move joystick #2 all the way backward. The Jaguar connected to PWM #1 should have its LED change color to red and the motor connected to that Jaguar should turn in reverse.
 - c. Joystick #1 full forward should result in Jaguar on PWM #2 having a red LED and the motor turning in reverse.
 - d. Joystick #1 full backward should result in Jaguar on PWM #2 having a green LED and the motor turning forward.

Confirmation of “Arcade Drive” Control System Component Operation

1. Move the joystick #1 Z-Wheel to the up position [+].
2. The “benchtop” system is now configured so that joystick #1 should give “arcade drive” behavior. For an “out of the box” cRIO, you should observe the following behavior:
 - a. Move joystick #1 all the way forward while keeping the joystick centered from right to left. The Jaguar connected to PWM #1 should have its LED switch to green and the motor connected to that Jaguar should turn forward; meanwhile, the Jaguar connected to PWM #2 should have its LED switch to red and the motor connected to that Jaguar should turn in reverse.
 - b. Move joystick #1 all the way backward while keeping the joystick centered from right to left. The Jaguar connected to PWM #1 should have its LED switch to red and the motor connected to that Jaguar should turn backward; meanwhile, the Jaguar connected to PWM #2 should have its LED switch to green and the motor connected to that Jaguar should turn forward.
 - c. Move the joystick to each of the four “corners” – when completely in each “corner” only one motor should turn. (This would implement “pivot” turns on a typical FRC robot.)

- d. While holding down button 2 of the joystick, move the joystick from side to side. Both motors should turn with rates proportional to the distance the joystick is moved away from center. This would implement “spin” turns on a typical FRC robot.
 - e. Experiment with moving the joystick to different positions, noting that different output behaviors take effect depending upon the position of the joystick.
3. Set the Classmate Driver Station to “Operation > Disable.”
 4. Turn off the “benchtop” system by firmly pressing the red button on the Hi-Amp 120A circuit breaker.
 5. Turn off the Driver Station by powering down the Classmate.

Confirmation of “Autonomous” Control System Component Operation

Before powering on the “benchtop” system, ensure that the motors are located in such a way that if they were to become immediately operational, they would not pose a safety hazard. Also ensure the joysticks plugged into the Driver Station are ‘centered’.

1. Turn on the Driver Station by powering up the Classmate. Wait approximately 35 seconds for the Driver Station to boot to the status screen.
2. Set the Driver Station to “Mode: Autonomous” using the buttons on the Operation tab of the DS.
3. Confirm that the screen reads “System: Disabled” and “Mode: Autonomous.”
4. Turn on the power to the “benchtop” system and wait for the cRIO to boot. Set the Driver Station to “System: Enabled” using the enable toggle on the Operation tab of the DS.
5. Set the Driver Station to “System: Disabled” in the Operations tab to disable the benchtop system.
6. Set the Driver Station to “Mode: Teleoperated” in the Operations tab.
7. Set the Driver Station to “System: Enabled” to re-enable the benchtop system with teleoperated control. Check that the motors move in accordance with the program coded for the joystick(s).
8. Set the Driver Station to “System: Disabled.”
9. Turn off the “benchtop” system by firmly pressing the red button on the Hi-Amp 120A breaker.
10. Turn off the Driver Station by switching to the setup tab and hitting the exit button, then logoff and power down the Classmate.