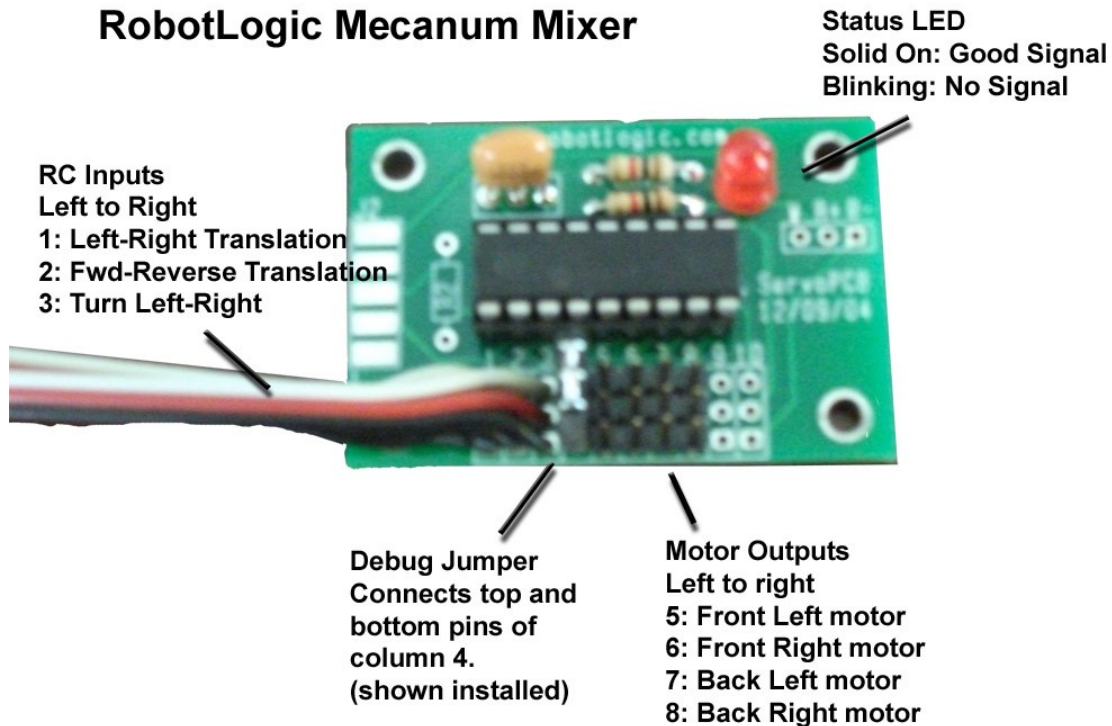


RobotLogic

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Mecanum Mixer Users Guide

RobotLogic Mecanum Mixer



Introduction

The RobotLogic Mecanum mixer allows for simple RC-control of a mecanum drive robot. The Mecanum mixer is plugged into a standard RC receiver using three input channels. Four motor speed controllers are then plugged into the mecanum mixer. The driver can then use any combination of fwd-reverse, left-right, and sideways translation commands to control the robot.

Features

3 Channel Mecanum Mixing

The Mecanum mixer uses three RC channels: one for rotating left and right, one for translating forward and backward, and one for translating left and right. These inputs can be connected to any output on your RC receiver.

Failsafe

The Mecanum mixer acts as a failsafe. It will shut off all outputs whenever no signal or an invalid RC signal is detected. The incoming signal is constantly monitored and operation is resumed as soon as a valid RC signal is re-detected.

Signal Boosting

When used with the popular IFI speed controllers, there is no need for additional in-line signal boosters. The Mecanum mixer can drive a Victor 833 speed controller on each of its outputs.

LED Status Indicator

The LED on your IMX-1 Mixer can be used to verify proper operation. Its behavior can indicate one of the following 4 states:

LED Behavior	Mixer Status
Off	No power
On – Solid	Valid signal
On – Slow Blinking	Invalid signal or no signal detected

Installation Instructions

Please follow these instructions carefully in order to get proper mixing. These steps are designed to ensure your robot is using the same conventions as the mixing algorithm in the RobotLogic mecanum mixer.

Connect the Mixer to your RC receiver.

There are three inputs to the RobotLogic mecanum mixer. The first input is the one closest to the left side of the mixer.

Mixer Inputs (left to right):

1. Left-Right translation - Usually connected to input 1 on your RC receiver.
2. Fwd-Reverse translation – Usually connected to input 2 on your receiver.
3. Left-Right turning – Usually connected to input 4 on your receiver.

Signal Test

Connect your receiver battery and turn on your transmitter. The LED on the mixer will turn on solid when it detects a valid signal. If the LED does not turn on or it blinks slowly, check that the servo leads are plugged into the receiver completely in the proper orientation, check that your receiver is receiving power, and check that your transmitter is on.

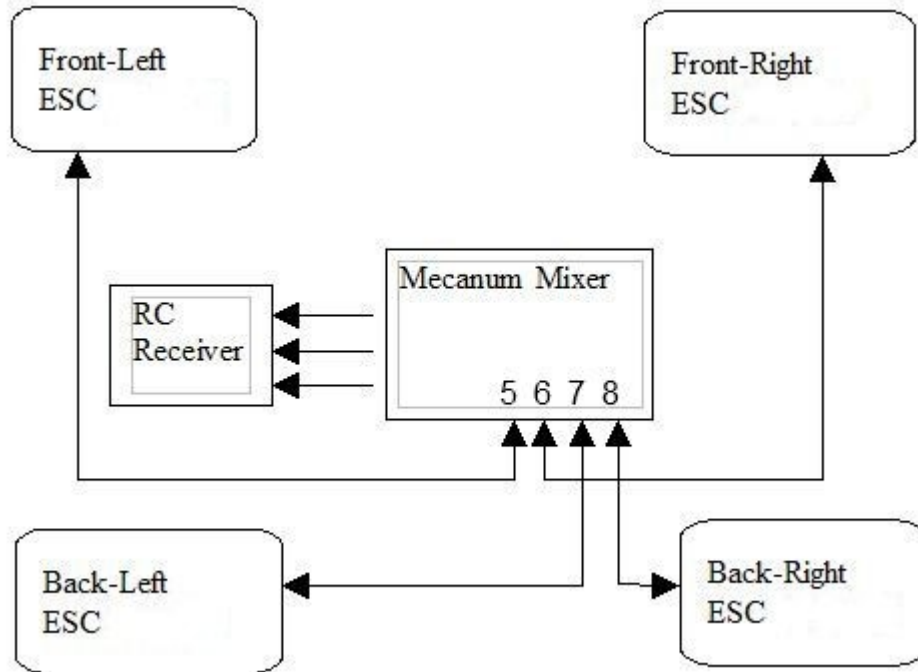
Connect Speed Controllers to the Mixer

There are 4 separate motor outputs on the mecanum mixer on the columns listed below:

Motor Outputs

5. Front-Left motor controller
6. Front-Right motor controller
7. Back-Left motor controller
8. Back-Right motor controller

Make sure your motors are connected to the speed controllers for the next steps. Refer to the wiring diagram below:



Test the mixer in debug mode:

The RobotLogic Mecanum mixer contains a debug mode which is enabled if a jumper is present across the debug pins at startup. To use debug mode, just install the jumper before powering up the mixer.

* The debug jumper should be installed on column 4 and connects the bottom pin with the top pin.

Debug mode executes a simple sequence of commands that will help you get all of your motor polarities correctly set to the conventions used by the mixer. Each motor is run one at a time in the forward direction in the following sequence:

- Front-Left
- Front-Right
- Back-Left
- Back-Right
- Pause

Watch the robot for a couple of times through the sequence and use the pause to identify the front-left motor. If the sequence is incorrect, then you have your speed controllers plugged into the wrong outputs on the mixer.

Once the sequence is correct, verify that each motor spins its wheel in the “forward” direction. If any of the wheels spin in the reverse direction, simply switch the polarity of the wires connecting that motor to its speed controller.

Test the mixer using your RC Transmitter:

Ensure that the robot is still on blocks and its wheels are not touching the ground. Turn off the robot and RC receiver, remove the debug jumper (or move it to a position that does not connect the top and bottom pins of column 4), and then turn everything back on again. The goal of this test is to see if any of the channels on your transmitter need to be inverted.

First, push forward on the drive control, this will usually be the right stick if you're using a dual-stick transmitter and you used the default channel connections described above. If the motors drive in reverse rather than forward, then you will need to invert this channel in your RC transmitter. This is rare but if you need to do it, you will need to consult the manual for your transmitter.

Next, try turning left or right. In this case, the motors should all react in the same way as a standard 'skid-steering' robot. If you're trying to turn right, then the left motors should run forward and the right motors should run backward. If this is backwards, then you will need to invert the steering channel on your RC transmitter.

Once you have the fwd-reverse and the steering inputs working correctly, you can proceed to driving your robot on the ground. If you find that sideways translation is inverted you just need to invert that channel on your transmitter.

Calibration:

To ensure best performance from your robot, you should now calibrate your speed controllers. We recommend calibrating using only the forward-reverse RC command so that your speed controllers end up calibrated to output peak motor power with a full forward command. If you mix in the other channels while calibrating, it is possible that you will cause your robot's top speed to be slightly reduced.

Enjoy your RobotLogic Mecanum mixer! If you would like to share your creation with us, please send an email to support@robotlogic.com!

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