Servo Actuator - Quick Start Guide

This guide covers how to connect a 3rd party linear actuator with position feedback to the LAC board, thereby turning it into a Linear Servo. Caution, wire color can vary by manufacturer. To prevent damage, verify wire function matches before connection.

Required:
- Linear Actuator with potentiometer feedback
- LAC Circuit Board
- Power Supply or Battery (must meet the actuator’s requirements and not exceed the LAC specification)

Optional:
- Control Potentiometer
- USB Cable
- Radio Controlled Receiver

<table>
<thead>
<tr>
<th>Step 1 (Connect the Actuator):</th>
<th>See diagrams on reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect the actuator to the LAC using the green screw terminals.</td>
<td></td>
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<table>
<thead>
<tr>
<th>Step 2 (Choose your control method):</th>
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<tbody>
<tr>
<td>Option A – Connect a potentiometer for manual control.</td>
</tr>
<tr>
<td>Option B – Connect an RC Receiver for remote control. You can use either the receiver power or an external power supply, but not both, as it will damage the receiver. Cut the red wire from the receiver to prevent damage when using an external power supply or BEC.</td>
</tr>
<tr>
<td>Option C – Connect a USB cable for computer control. You will need to install the LAC driver from <a href="http://www.actuonix.com/category_s/1930.htm">http://www.actuonix.com/category_s/1930.htm</a> For more control options, like PLC, PWM or DAQ control, see the LAC datasheet at the link above.</td>
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<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Pin Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference +</td>
<td>P+</td>
</tr>
<tr>
<td>Reference -</td>
<td>P-</td>
</tr>
<tr>
<td>Wiper</td>
<td>VC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RC Receiver</th>
<th>Pin Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>-</td>
</tr>
<tr>
<td>Red</td>
<td>Not Connected</td>
</tr>
<tr>
<td>White</td>
<td>RC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Wire Function</th>
<th>LAC Pin Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Feedback Reference +</td>
<td>P+</td>
</tr>
<tr>
<td>Yellow</td>
<td>Feedback Wiper</td>
<td>P</td>
</tr>
<tr>
<td>Red</td>
<td>Motor +</td>
<td>M+</td>
</tr>
<tr>
<td>Black</td>
<td>Motor -</td>
<td>M-</td>
</tr>
<tr>
<td>Blue</td>
<td>Feedback Reference -</td>
<td>P-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Polarity</th>
<th>Pin Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>+</td>
</tr>
<tr>
<td>Negative</td>
<td>-</td>
</tr>
</tbody>
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Optional:
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- USB Cable
- Radio Controlled Receiver

Step 3 (Reset the LAC board):
Set up the default configuration by turning all four of the blue potentiometers fully clockwise. Turn the one labeled “Accuracy” back 1/8 of a turn for quieter operation.

Step 4 (Connect power):
Connect your power supply or battery, and test for basic operation. If the actuator extends to one end and then stops responding, swap the white and blue actuator wires and test again.

Step 5 (Optional: Adjust Performance):
Adjust the four blue potentiometers as desired. Load the new settings by turning the power off then on.

Accuracy – This potentiometer controls how close the actuator has to be to the commanded position before the motor is turned off. Setting this to fully clockwise may significantly increase how loud the actuator is.

Speed – This potentiometer controls how fast the actuator moves. Rotate counter clockwise to reduce the speed. Actuator noise will increase when speed is reduced.

Limits – These two potentiometers are digital limit switches. They control the minimum and maximum actuator positions (How far in and how far out the shaft is allowed to move).
Wiring Diagrams:

Option A: Potentiometer Control

- Knob or Slide Potentiometer
- Battery/Power Supply
- Red (+)
- Black (-)
- Signal (White)
- Reference (Red)
- Reference (Black)
- Actuator Blue
- Black
- Red
- Yellow
- White

Option B: RC Control

- Power Supply/Battery
- Red (+)
- Black (-)
- Actuator Blue
- Black
- Red
- Yellow
- White
- RC
- White
- Black

Do not connect the Red Wire

Option C: USB Control

- Positive (+) Battery or Power Supply
- Ground (-) Power Supply or Battery
- USB
- Actuator Blue
- Motor Black
- Motor Red
- Yellow
- White

Step 5: Tuning

- Accuracy
- Speed
- Retract Limit
- Extend Limit

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