

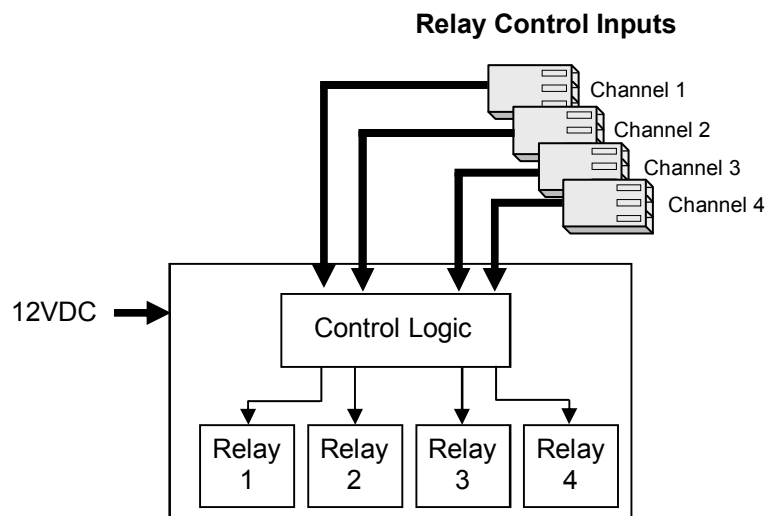
Animated Prop Systems

User's Guide for the RB4 Relay Board

System Features

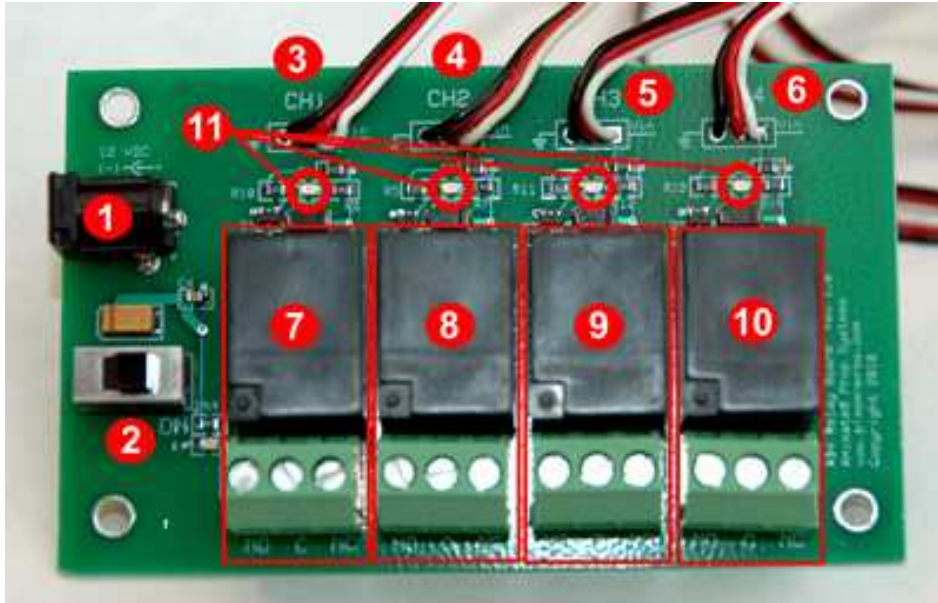
- 4 inputs from RC servo controller allow independent control of 4 relays
- Each relay can be controlled by 5V signal
- Connects to servo controller using same connectors as a servo motor
- Each relay provides normally open (NO) and normally closed (NC) connections
- Each relay is rated at 28VDC at 5A (10A peak) and 120VAC at 5A (10A peak)
- Indicator LEDs to show when each relay is activated

Relay Board Block Diagram



Caution! Working with electrical devices such as this can be inherently dangerous. Using this device without a thorough understanding of the operational principles is considered unsafe and misuse can cause SERIOUS INJURY OR DEATH. The user assumes all liability when using this de-

RB-4 Relay Board Layout and Basic Functions



- 1 - Power connector (12V DC)
- 2 - Power switch
- 3 - Input connector for channel 1
- 4 - Input connector for channel 2
- 5 - Input connector for channel 3
- 6 - Input connector for channel 4
- 7 - Relay and Connector 1
- 8 - Relay and Connector 2
- 9 - Relay and Connector 3
- 10 - Relay and Connector 4
- 11 - Relay indicator LEDs

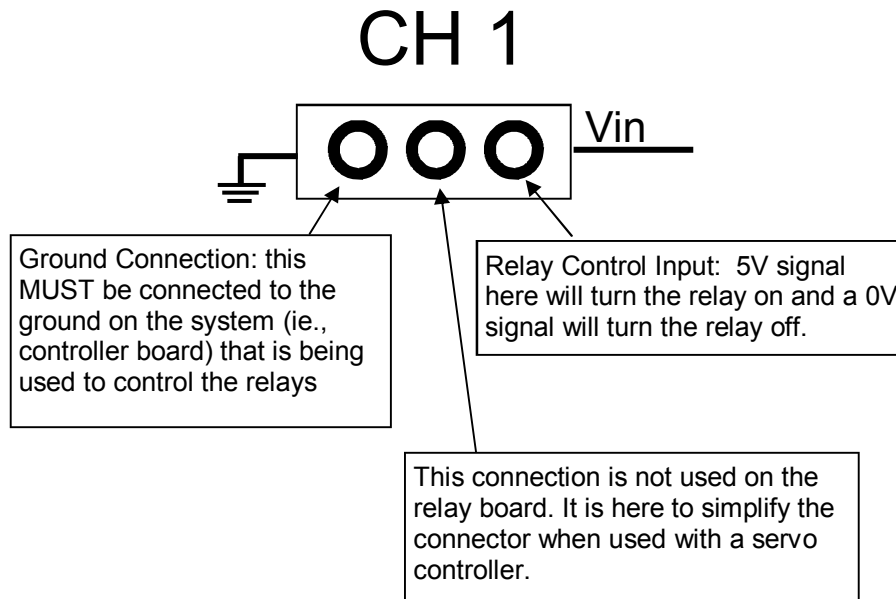
Operational Overview

In theatrical prop applications, it is often required to control lights, motors, pneumatic cylinders or other electrical devices and have these devices turn on or off at specific times. The RB-4 Relay Board provides 4 relays that can be used to control these types of devices.

Input Connections For Controlling Relays

Each of the 4 relays are independent of each other and must be controlled separately. Each relay requires a ground connection and a 5V logic signal to activate the relay. The diagram below shows one of the channel input connectors and the respective signals that must be applied to activate the relay.

Note that the center connection for each relay is not used by the relay board. The connector is this way to simplify the connection to a servo controller board if that is the application.

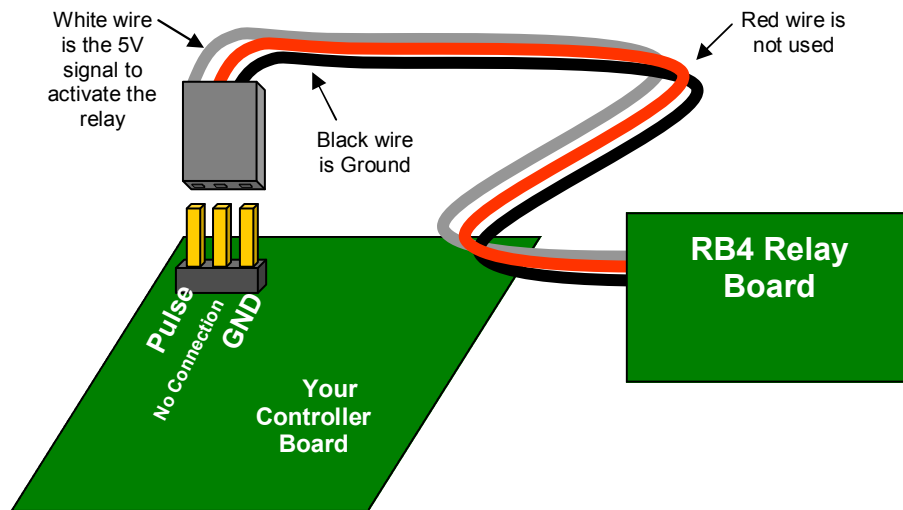


Turning the relays on and off

Turning on or off the relays on the Relay Board is very simple. A 5V signal applied to the "Vin" input of any of the 4 channels will turn on the relay. Since each relay provides both Normally Closed (NC) and Normally Open (NO) outputs it is possible to turn a device on or off when the relay is activated.

Connecting the Relay Board to a Controller

The RB-4 Relay Board requires 5V signals from another source to turn the relays on and off. A typical configuration for controlling the Relay Board is shown below although this is just one possible configuration. Any device that can supply the 5V control signals to the relay board could potentially be used to control the relays. Note that since the red wire (center wire on connector) is not used by the RB4 Board, this center connector does not have to be connected to anything.

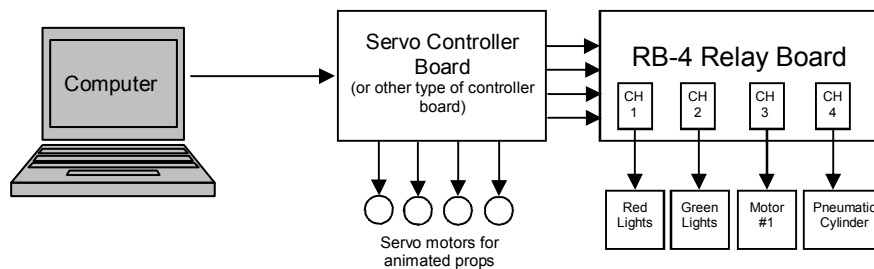


NOTE: Each of the 4 channels on the RB4 must be must be connected as shown in this diagram in order to control the relays. Connections for unused relays can be left unconnected.

Using the Relay Board with a Servo Controller

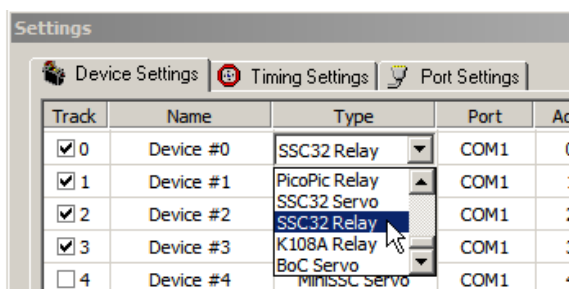
The RB4 Relay Board was designed to be easy to use with suitable servo controllers. For a servo controller to be compatible with the RB4, it must be able to create a logic level output rather than the standard PWM pulse used to control standard servo motors. Not all servo controllers have this feature. One controller that does have this feature is the SSC-32 by Lynxmotion (www.lynxmotion.com).

A typical configuration for controlling the Relay Board using a servo controller is shown below although this is just one possible configuration. Any device that can supply the 5V control signals to the relay board could potentially be used to control the relays.

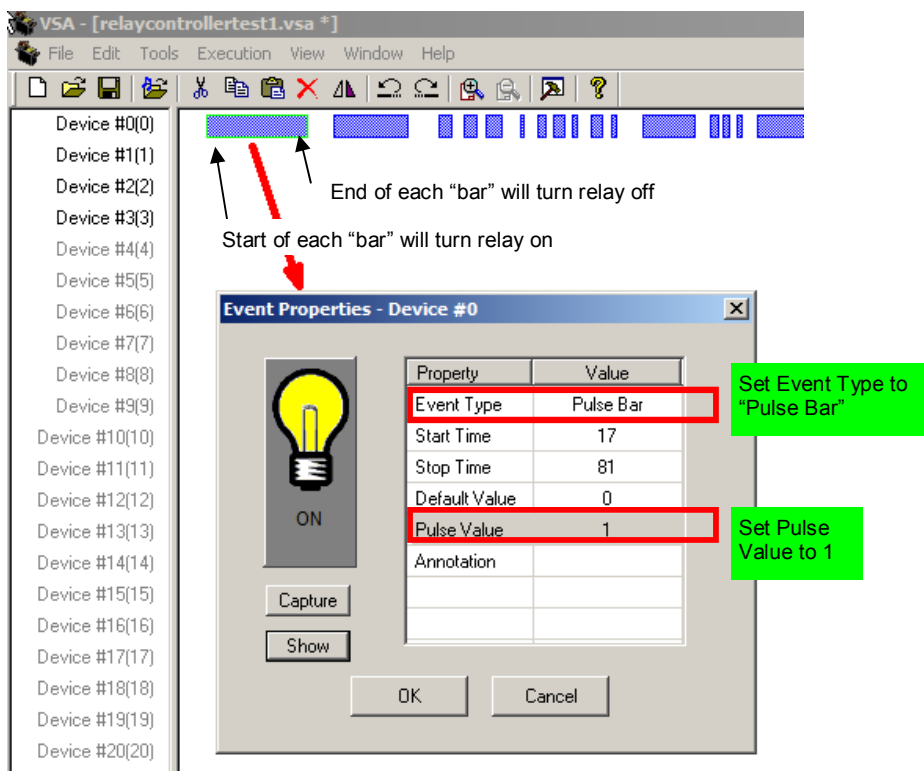


Using the RB4 and servo controller with the Visual Show Automation (VSA) software

Brookshire Software offers a software package called VSA that is often used to control theatrical prop operations synchronized to audio. This software can operate the Lynxmotion SSC-32 servo controller which can in turn be used to control the RB4 Relay board. In order for the SSC-32 to turn on and off the relays, the device "Type" must be set to SSC32 Relay. Then in your "show", use the "Pulse Bar" method to control each relay. The relay will turn on at the start of each "bar" in your show and the relay will turn off at the end of each bar.



Set the track device "Type" to SSC32- Relay



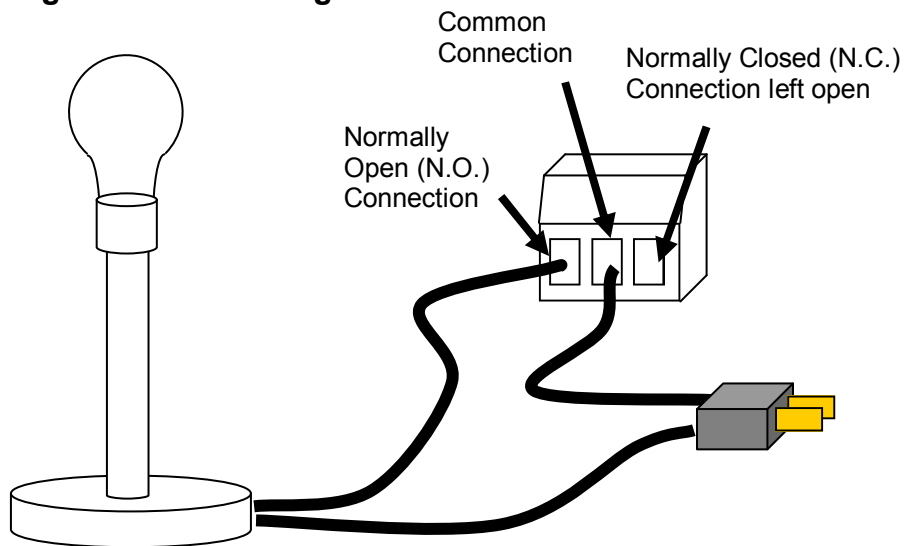
Relay connections

The relays on the Relay Board can be used to control both AC and DC devices. If you are planning on using AC devices such as lights, be aware that the maximum current that the relays can handle is 5A continuous load and 10A peaks load for 120V AC. For 240V AC both continuous and peak rating is 5A. For DC applications such as DC motors, the maximum specification is 28V and 5A continuous and 10A peak..

The relays act as switches that are turned on when a 5V signal is detected at the input connector. The Normally Open (NO) connection will act as an open switch until the relay is activated and then the switch is closed. In the example below a light bulb is being controlled by the relay. Until the relay is activated the light bulb will be off and when the 5V signal is detected on the input then the light will be turned on and will stay on as long as the 5V signal is present at the input.

A device connected to the Common and “Normally Closed” (NC) terminals will operate in the opposite way, ie., the device will initially be in the “ON” state until the relay is activated and then the device will then turn to the “OFF” state when the relay is activated.

Example: Typical configuration for controlling a standard AC light



Caution! When working with mains voltages (120V or 240V AC) you must take precautions to prevent electric shock. Working with electrical devices such as this can be inherently dangerous and using this device without a thorough understanding of the operational principles is considered unsafe and misuse can cause **SERIOUS INJURY OR DEATH**. The user assumes all liability when using this device.

Notes

Additional Resources

Lynxmotion www.lynxmotion.com

Brookshire Software (VSA) www.brookshiresoftware.com

***Animated Prop Systems
9003 Deer Shadow Pass
Austin, TX 78733
www.pimpmyprop.com
sales@pimpmyprop.com***