

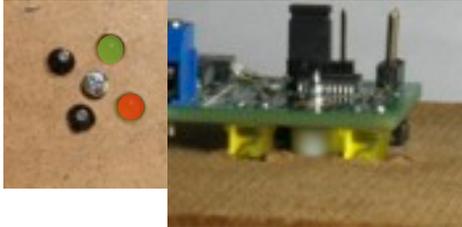
# Singlet DCC Decoder and Servo Driver With Automatic Endpoints - BiColor

## Installation

Mount the decoder on the back of your fascia or control panel. Drill 4 7/32" holes for the LEDs and switches and a center 1/8" hole for the



mounting screw according to the drilling template to the right. Mount the servo below the switch with the points centered. There are a number of ways to mount the servo, the picture shows one method using a hole through the sub-roadbed under the throw-bar.



Photos of the Singlet mounted on the fascia. The plastic washers go between the fascia and the decoder to adjust the height.



The 3 most common servo lead colors and how they plug in.

Connect the DCC bus to the blue 2-position terminal block. If not using DCC, the power can be any power supply from 7-18V AC or DC.

Plug the servo in to the 3-prong connector on the board marked "BRS" (for black/red/signal). If the servo lead is too short, then a servo extension may be used to lengthen the run or you can splice in your own wire. Depending on the make of the servo you can extend the servo lead quite far - up to 15 feet in most cases.

Turn the power on to center the servo before mounting.

## Automatic Endpoint Adjustment

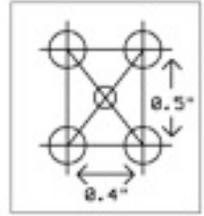
The Singlet can automatically adjust the servo endpoints. The

servo starts in the center position and then searches to one side until it finds a hard stop (i.e. the stock rails of a turnout) and then backs off a bit. It then searches for the other stock rail in the opposite direction. *The points should be between the stock rails at the start of the adjustment.*

To start the search move the Run/Auto jumper to the **Align** position (right photo). After a 2 second delay, the servo will start slowly moving. The LED will flash rapidly as it searches when it finds the stock rail it will start slowly flashing to indicate it is fine tuning the final position. It then starts to adjust the second endpoint. When finished it will flash both LEDs several times. Move the jumper back to the **Run** position (left photo). To **abort** the alignment operation, press either button.

**Servo Reverse** - If you put the Align jumper on briefly - for less than a second, the servo will swap endpoints relative to the buttons and LEDs.

*Note* - if there are not hard stops at the endpoints then the servo will set the endpoints to the maximum range. If you are animating something other than a turnout without hard endpoints, you may want to use a couple of nails to mark the endpoints or you can manually adjust the endpoints (see below).



Mounting template (full size). Cut out and tape to fascia.

## Manual Programming

The unit can be completely programmed with the two buttons including the 2 servo endpoints, the LED colors, the speed and the DCC address.

Button	LEDs	Action
Hold Button 1	LED1 flashing	Set the endpoint for Button 1
Hold Button 1	Sets the LED colors for position 1	Push each LED until the colors are correct
Hold Button 2	LED2 flashing	Set the endpoint for Button 2
Hold Button 2	Sets the LED colors for position 2	Push each LED until the colors are correct
Hold Button 2	Both LEDs flash alternately	Set the servo speed
Hold Button 2	No flash	Exit if not setting the DCC address

**To lock out the programming buttons from accidentally being activated put on the Lock jumper. See picture to the right.**



Locked

## DCC Address

Hold down both buttons at the same time for about 1 second until both LEDs start flashing. The decoder will now remember the next stationary decoder address issued. Issue the stationary decoder command (on Digitrax this is called *switch* on NCE use *Select Accy*) with the new DCC address. Use throw, (t) or close (c) (NCE calls these N and R) to match the state the turnout is currently in. I.e., if the turnout is thrown issue a throw command; if the turnout is closed issue a close command. This will set the sense of throw and closed. The LEDs will stop flashing to indicate the address has been accepted.

**To reset the decoder to its factory default settings**, first turn off the power (or remove one of the power leads). While holding down both of the buttons turn the power back on. The servo endpoints will be centered and the DCC address set to 1.

## DCC Programming (Optional - you can program all functions with the buttons)

You can find more information on DCC programming at our website [www.tamvalleydepot.com](http://www.tamvalleydepot.com)

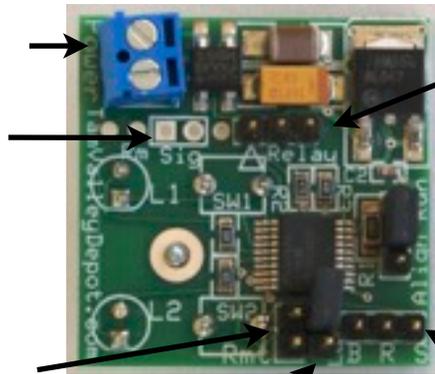
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Connect the blue terminal to the DCC bus for DCC control. For non-DCC uses use any power supply from 7-18V AC or DC can be used.

Remote signal input point. A 5V logic signal can be attached here to **Sig**. The round hole is ground, square hole is the signal input.

Remote switch attachment point. A momentary NO switch (pushbutton) can be attached here across these 2 pins. More than one switch may be added in parallel for multiple control points.

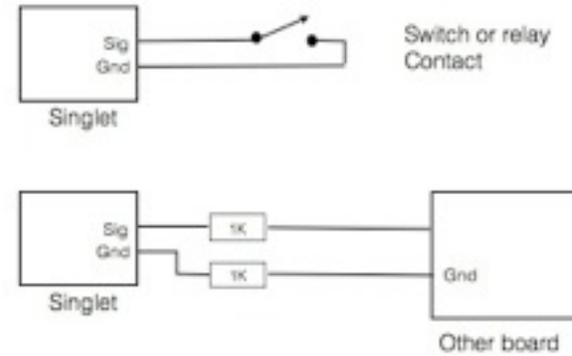
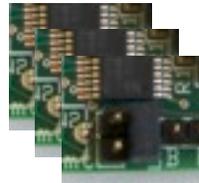
Jumper to lock out the pushbuttons from programming. To lock cover both pins as in the picture to the right.



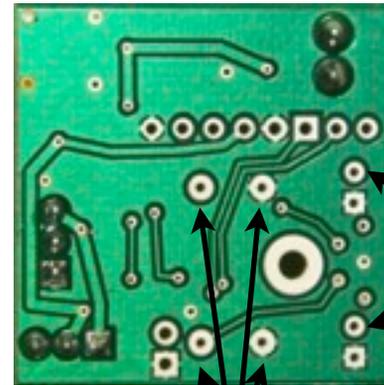
Remote Relay Connector (see below for more information)

Automatic endpoint adjustment jumper. Move to Align position to start the automatic search. When finished put the jumper back to Run (as shown).

Servo Connector

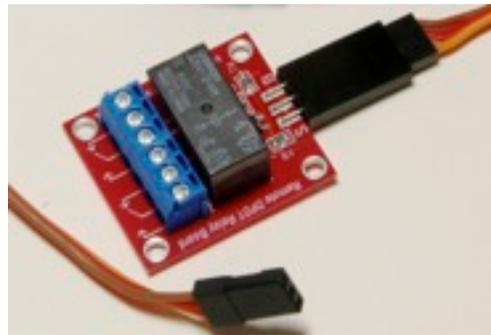
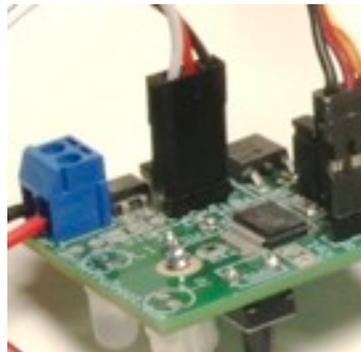


## Kit Assembly Information



Long lead of LED goes in the round hole.

Switches go in these holes - polarity does not matter. Note: you may substitute any type of momentary NO switch.



## Singlet DCC Decoder and Servo Driver With Automatic Endpoints - BiColor

### CV Programming (Optional) If the Lock jumper is ON remove it first. The Lock jumper will prevent changing any CVs.

*Note: All the functions can also be programmed with the two buttons, so DCC programming is not required, nor is a DCC system required. The address is best set by holding down both buttons until both LEDs start to flash. Then issue an accessory decoder command of the desired address of either close or throw (normal or reverse on NCE) depending on how the turnout is set at the time of the command.*

The decoder can be programmed in three ways to enable it to work with most DCC systems.

- 1) **OPS mode for Accessory Decoders (programming on the main).** If this mode is available then it is the preferred mode. It can be done with the decoder in place. CVs can not be read back in this mode, although you can see the affects of the commands immediately. Not all DCC systems support this mode however.
- 2) **OPS mode as locomotive #1 (programming on the main).** Put the singlet in DCC programming mode by holding both buttons until both LEDs flash (~ 1 sec). The singlet will respond to OPS mode commands address to loco address 1. It will do this even if its accessory decoder address is not 1. Make sure you do not have a locomotive addressed as 1 on the track at the same time.
- 3) **Direct Mode on a programming track.** This is probably only useful for initial setup as it is inconvenient to move the decoder to the programming track. A programming booster may be needed as is often the case for sound locomotives, since the decoder draws a fair amount of power. We can recommend the PowerPax by DCC Specialties. The SPROG II (use Direct Bit mode) also works very well. Connecting a servo for ack pulses that will let the CVs be read back. However, *even if the decoder is not able to respond to CV read commands it will still respond to CV writes properly.*

CV	Function	Default	Range	Notes
1	Address	1	1 - 127	7 lowest bits of address (Address = CV1 + 128 * CV9)
2 - 6	Not used			
7	Version	37	Read Only	
8	Manufacturer	59	Read Only	NMRA assigned Manufacturer ID
9	High address	0	0-7	3 highest bits of address
10 - 28	Not Used			
29	Configuration	0		No uses of CV29 are currently used
30 - 32	Not Used			
33	ServoClosed	94	0-200	100 = Centered, 0 = minimum and 200 is maximum throw
34	ServoThrown	106	0-200	100 = Centered, 0 = minimum and 200 is maximum throw
35	Servo1Speed	5	1-40	1 = slow creep and 40 = very fast
36	dccReverse1	0	0-1	Controls the reversing of DCC throw commands - i.e. if set to 1 then a "c" is interpreted as "t" and <i>vice versa</i> .
37	Reverse	0	0-1	Controls overall reversing of buttons and LEDs (equivalent to turning unit over or reversing servo on vertical axis)
38	LED1OnColor	2 (Green)	0-3	Off=0, Red=1, Green=2, Yellow=3
39	LED1OffColor	1 (Red)	0-3	Off=0, Red=1, Green=2, Yellow=3
40	LED2OnColor	2 (Green)	0-3	Off=0, Red=1, Green=2, Yellow=3
41	LED2OffColor	1 (Red)	0-3	Off=0, Red=1, Green=2, Yellow=3
50	AutoAlignCurrent	0	0-255	The auto adjust current. A zero means use the default of 24. Change to ~10 if alignment current is too high.