Safety Precautions.

Before installing this product, make sure that you have read the full instruction guide and are comfortable with the requirements.
Make sure that all parts, especially plastic packets, are kept away from young children.
These boards are still in a test phase of marketing and maybe subject to failure.

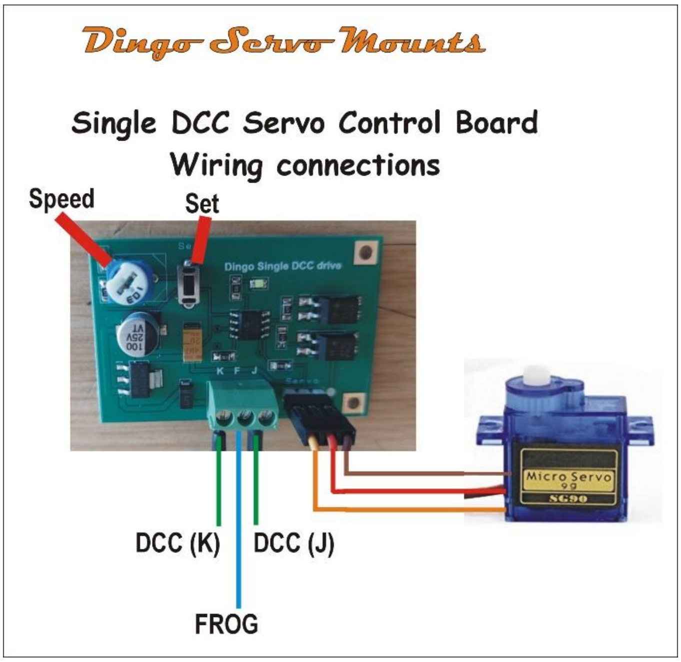
Description and Origin

This control board is the brain child of Julian Coles, who cam up with the idea of a small single servo board controlled completely by DCC.
It also features a DCC frog switch on board so that there is no need for microswitches or other frog switching mechanisms.

I have tested this unit with 3 different DCC systems, namely, Digitrax Zephyr, NCE powercab and a Lenz LH100/LV100 system.
All 3 work very well although setup maybe a bit different depending on the DCC system you use.
Always good to refer to the manual for your particular system.

Wiring up.

Wiring up is very simple.

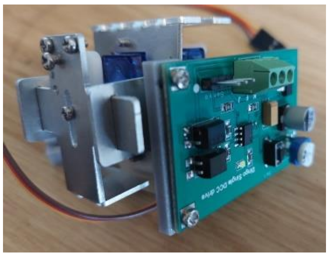


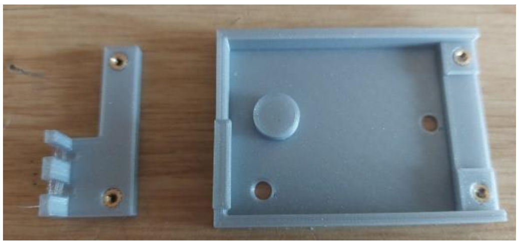
The DCC input is connected to the 2 outer terminals marked K and J

The Frog is connected to the centre terminal

The servo is attached to the 3 header pins with the dark brown or black wire connected to the edge of the board nearest the white dot.

We will also be able to supply 2 different mounting brackets fitted with Brass threaded inserts and all mounting screws required.





Programming (From Julian)

Servo Decoder Instructions V2

This is a single DCC Servo Decoder for points.

1 The key new feature of this decoder is that the servo end positions are set using the DCC controller which operates the layout - **no setting box is needed**. **Any DCC Controller can be used** even if it is a 'Toggling' controller (eg NCE) which doesn't send continuous DCC commands (eg Multimaus/Z21).

2 **Frog switching is** included - just run a wire up to the frog. Switching is solid-state (opto-MOSFETs). Current is 2A continuous, 6A peak. No microswitches needed

3 **Powered by the DCC bus**

4 **Servo direction** can be set.

5 **Servo speed** is adjusted with a potentiometer on the PCB. (Clockwise is slower and Anti clock is faster)

These instructions assume that your DCC Controller sends accessory/point control commands for either 'Straight' / 'Closed', or 'Turned' /'Thrown'.

1 Setting up the DCC address

The decode uses four consecutive DCC addresses.

The first address is the servo operating address (eg 45).
Next address (eg 46) **increases** the servo position.
Following address (eg 47) **decreases** the servo position.
The last address (eg 48) toggles the servo direction.

A **Briefly press the SET button (this is the small Push Button on the PCB)** - the LED flashes twice as confirmation.

B **Send the chosen Servo Address** (eg 45) with your DCC Controller (either direction is fine). The LED flashes once.

Now try it out. Using the chosen Address, send the commands for 'Straight' and 'Turned': the servo will move either side of its central position by a small amount.

When the PCB is powered up for the first time, the servo end positions are set to just either side of the central position. (The servo will 'jump' to its central position if not already centred.)

For enthusiasts: the settings are 1.45ms and 1.55ms. The normal range of drive pulse is 1ms to 2ms, the centre position is 1.5ms.

The Frog is switched 'off' as soon as the servo starts to move. At the end of the movement, the correct frog is energised.

2 Setting the Servo End Positions

Servo end position adjustments are made using DCC accessory commands from your Controller.

The set-up is automatically made for the direction the point is set to - set up each direction in turn ('Straight' and 'Turned').

The servo horn moves slowly during this set-up to allow accurate positioning.

The procedure uses the decoder's address (eg 45) and the following two addresses (eg 46 and 47)

A Select the point address eg 45

B Send the direction for adjustment - 'Straight' or 'Turned'

C To **increase** the blade position: Select address +1 eg 46

D Press 'Straight' (briefly) - the blade position increases slowly. This moves the switch rail towards the stock rail

E Press 'Turned' - the blade stops moving and the position is stored

F To **decrease** the blade position: Select address +2 eg 47

G Press 'Straight' (briefly) - the blade position decreases slowly. This moves the switch rail away from stock rail.

H Press 'Turned' - the blade stops moving and the position is stored

I Select the point address, **select the other direction,** and repeat the procedure

J Point can now be operated with its address

The software prevents you from setting the blade beyond the setting for the other direction - that would be completely illogical! In fact, the limit is just before the other setting, so that the servo will always move a tiny bit at the limit. The setting range is limited to 90 degrees. During setting, the servo will stop moving when it reaches its limits.

3 Set the Direction of rotation (Useful if mount is mounted the other way around)

'Address +3' (eg 48) sets the servo direction of rotation. It may be correct already!

This allows you to set the servo to go in the direction you want. Usually, you will want the point to move to the straight position after a 'Straight' DCC command. This could be with the clockwise (CW) direction of the servo, or the counter-clockwise (CCW). It depends on how the servo is mounted.

- Press the 'Straight 'button on your DCC Controller: LED confirmation, long pulse. Servo will move **clockwise to set the point 'straigh**t'.

- Press the 'Turned 'button on your DCC Controller: LED confirmation, short pulse. Servo will move **counter-clockwise to set the point 'straight**'.

4 LED flashes

1 Whenever the decoder is powered up, the LED flashes.

2 Two flashes when the address setup is started.

One flash when the servo address is selected

NOTE: Sometimes the indications “straight” maybe “Closed” and “Turned” maybe “Thrown” Depending on your DCC system.

This has been tested with a Digitrax Zephyr. A NCE Powercab and a Lenz LZV100/LH100 setup and it works well with all of these, although the setup is different – see the relevant manual for full details.

I hope that you will find this unit useful and, as always, I welcome any feedback.

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With Grateful thanks to Julian Coles for help with the design and firmware.