

Dingo Servo Mounts

Yellow "Bouncy" Signal Control Board

Safety Precautions.

Note: All PCB's supplied in Anti-static bags for protection!

NOTE: This board is only for controlling Semaphore signals. Do NOT use for points!

Before installing this product, make sure that you have read the full instruction guide and are comfortable with the requirements.

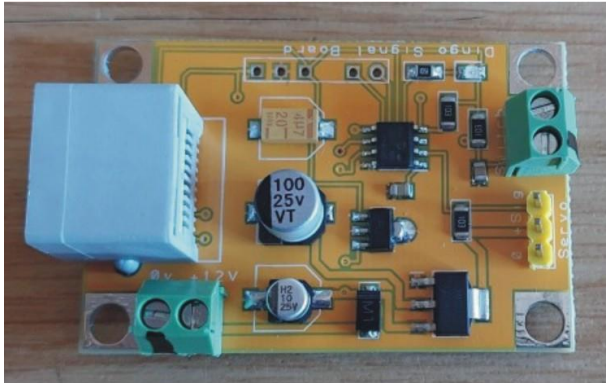
Make sure that all parts, especially plastic packets, are kept away from young children.

Only use certified power supplies for your region and **DO NOT** interfere with the Mains side of the power supply.

If you are unsure as to how to do the electrical connections, please consult with someone who has the required expertise or contact Dingo Servo Mounts for more information.

These units are not toys, but serious modelling parts.

Making sure you have the right board



The board has a Yellow resist printed on the board.

On the back there should be a sticker indicating that this is a "Bouncy Signal Board.

If all else fails connect 12V DC power to the board and if the LED is Yellow then you have a Signal Board.

Description and Origin

There are many servo control boards on the market to-day which can be used for model railway point and signal operation.

Most are for multiple servos and offer all sorts of bells and whistles.

There are also a range of excellent kits available to members of the MERG group which offer a variety of control options.

I believe there is a need for a very simple board that offers easy setup and operation for model semaphore signals which will give a "bouncy" effect.

This is the reason behind the development of this particular board.

The Signal Control Board is designed for use with standard 9g servos like the TowerPro SG90, Hobby King HK15178 or similar.

This is an updated version of our original "Bouncy" Signal Board

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Note: This board will NOT work with the "Ultra Micro" Servos. HK5330 etc.

The Yellow Single Control Board has a preset speed to simulate real life movement and there is no provision for adjusting the speed.

The board will give a "double-pull" on the up stroke and will bounce when returning to the down position.

The rate of "pull" and "bounce" is randomised so as to give a variety of different results.

The two end positions are set very simply by means of a plug in setting box.

A simple single pole on/off switch is all that is required to move the servo from one position to the other.

This latest firmware will default to the signal being on (at danger) when the switch is open or disconnected.

Preparing the Signal Mount

In order to get this board working correctly it is necessary to remove any play in the servo mount. You may remember that all our mounts come with a bit of play (hysteresis), but sadly this needs to be removed for good "bouncy" action.

This needs to be done to either the single or dual signal mounts. (The Multisignal and Omni mount should be OK as they are.)

Note: If using the new "Mini" mount range this step is not required.

This can be done in 2 ways.

1. Slide a short length of 1.5mm Heatshrink tubing over the drive screw (that's the tiny self-tapper that you insert into the servo horn to drive the slider up and down). Make sure that you leave enough thread on the screw to screw into the horn. Shrink the tubing so that it forms a "Plastic" washer at the head end of the screw which should now fit more snugly into the slot on the Slider.
2. Remove the servo from the mount and drill the hole in the servo horn out to 1.8mm and then insert a M2 x 6mm screw from the back.



Now reassemble the motor and refit from the back of the mount so that the screw engages into the slot on the slider.

Once modified check that the mount operates correctly and that there is minimal play in the mechanism.

Wiring up.

You will need a smoothed and regulated DC power supply of 9 – 12 V DC with a capacity of at least 1Amp for a single board.

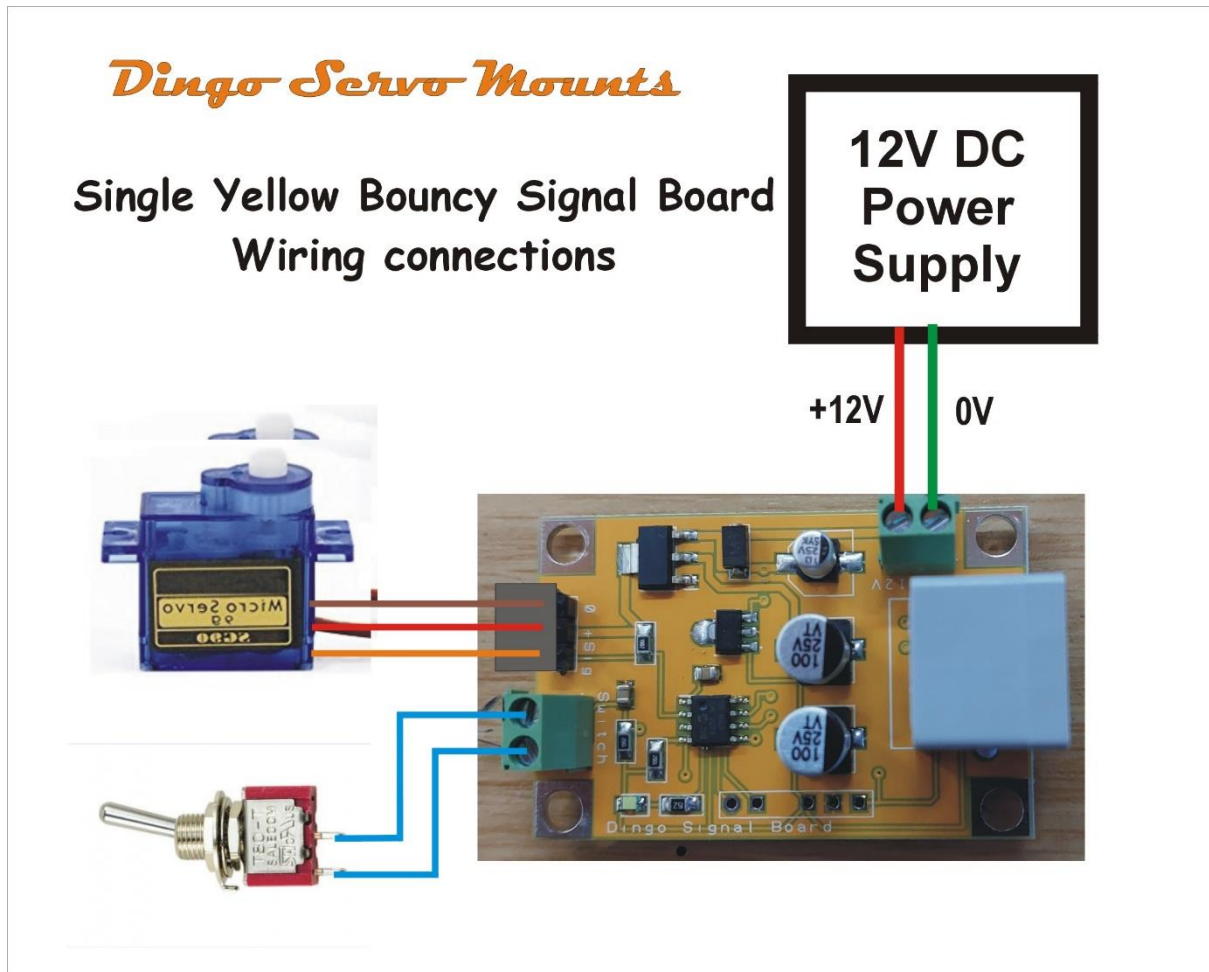
A standard 2A wall wart will be sufficient to drive quite a few boards as long as not more than 2 are actuated at the same time.

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You will also need a SPST switch to control your board. (This may also be a set of relay contacts or similar from your layout control panel.)

Note a push button switch will not work unless it is self latching.



Wire up as per this diagram.

Note the polarity of the power supply is important. (If connected the wrong way around, the board will not work but will not be damaged.)

The servo needs to be connected with the black or dark brown lead towards the top end of the board.

The switch simply shorts the two switch contacts together.

Note that the one nearest the servo plug is connected internally to earth. (0v)

The other pin is "live"

Boards are marked with black marker pen on the 0V terminals.

It is advisable to test the servo and board before fitting the servo to the layout and advisable to use a setting box as outlined in the following section to centre the servo.

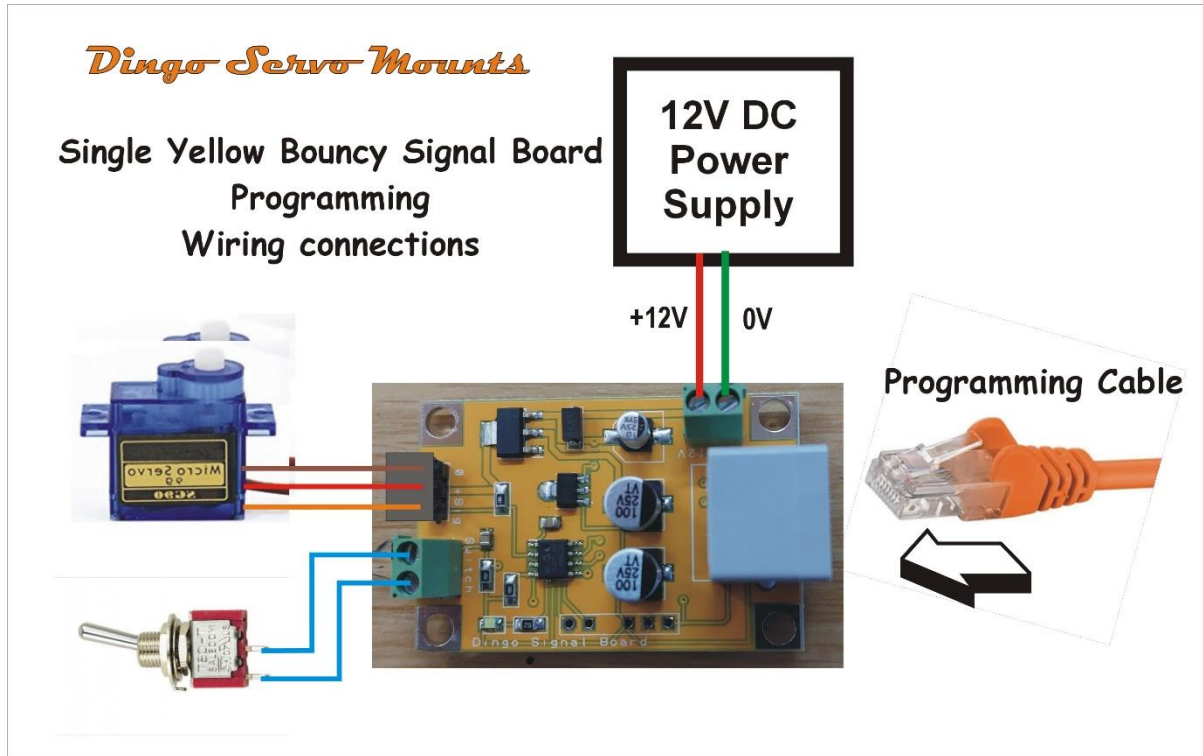
We always recommend using one of our Dingo Servo Mounts to get optimum performance from your servo on your layout.

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Setting up the end positions.

Once the unit is connected as described above, switch on the power and after a second or so the LED will light to show that the board is in working order.



Now plug one of our setting boxes into the RJ45 connector on the board.

The Setting Box needs to have a network cable (Cat5) plugged into the back of the unit. (There is a short 2m cable supplied)



Before connecting the setting box make sure that both controls are in the mid position. Arrows or markers pointing straight up.

WARNING!

Do NOT use Crossover cables

Use cables supplied by Dingo Servo Mounts or Cat5e straight cables only

Use of crossover cables can lead to permanent damage

For the "ON" or danger position make sure that the switch is in the open position (You can test this with a multimeter)

Now move the switch on the Setting box to "SET"

Immediately the LED will flash twice and the go out indicating that the board is now in setting mode.

Now adjust the board with the "Yellow" knob (VR2) until the signal is in the horizontal position.

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Now operate the switch to the "CLOSED" position – the LED will come on momentarily and then go out.

Now set the Upper or lower position depending on the quadrant you are modelling by using the white knob (VR1)

If using upper quadrant (LMS style) signals this will be above the horizontal and if using lower quadrant (GWR style) signals this will be below the horizontal.

Once this is done, switch the setting box to "RUN" and the values will be written to the Chip.

The end positions are now set and the unit should operate when the switch is toggled.

You Should get a double pull going "UP" or "DOWN" and it should bounce when returning to horizontal.

The settings are generated randomly and will be different each time to add some semblance of realism.

At anytime the settings can be changed by plugging the setting box in again and repeating the above procedure.

ONE FINAL NOTE! Sometimes at switch-on the servos may move to the mid position before going back to the set positions. This is a software protection device to make sure that the servos don't go the wrong way with a bad switch on spike or bad shutdown. It is therefore important that the midpoint of travel is within the 2 set points of the servo.

I hope that you will find this unit useful and, as always, I welcome any feedback so that the boards deliver the best solution for your model railway

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If you haven't already seen our amazing servo mounts in action, please check out the Video Links Page on our website.

With grateful thanks to Fraser Smith for his help and input with the PIC Code.