Dingo Servo Mounts
Twin "Bouncy" Signal Control Board

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

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

As we are using the same PCB for both the Twin Servo control Board MK2 and the Twin Bouncy Signal Board, please check that you have the right board.

There are 4 main ways to check that you have a "Bouncy" signal board.

On the top of the board you should find a yellow dot on top of the Setting box connector.

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

The 2 servo connectors are White and Black for Servo 1 and 2 respectively – Also the setting pins are White and black for the 2 setting positions.

If all else fails connect 12V DC power to the board and if the LED's are White and Blue then you have a Twin 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.

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Twin "Bouncy" Signal Control Board

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

The Twin Signal 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.

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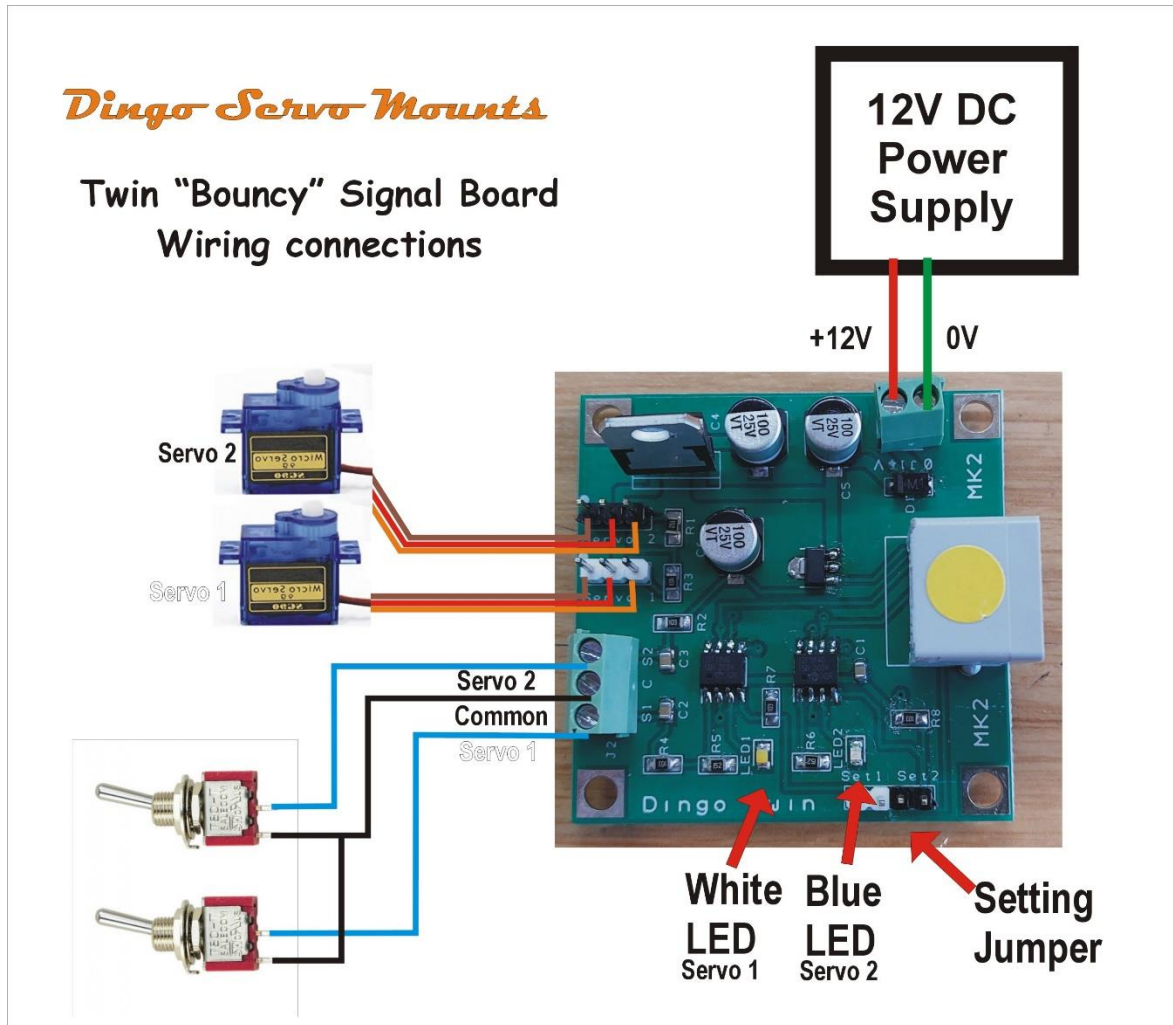
A standard 2A wall wart will be sufficient to drive quite a few boards as long as not more than 2 are actuated at the same time.

You will also need 2 SPST switchs 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.

Twin "Bouncy" Signal Board Wiring connections

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 servos need to be connected with the black or dark brown lead towards the outside edge of the board.

The switches simply short the two switch contacts together.

Note that the centre Screw terminal is connected internally to earth. (0v)

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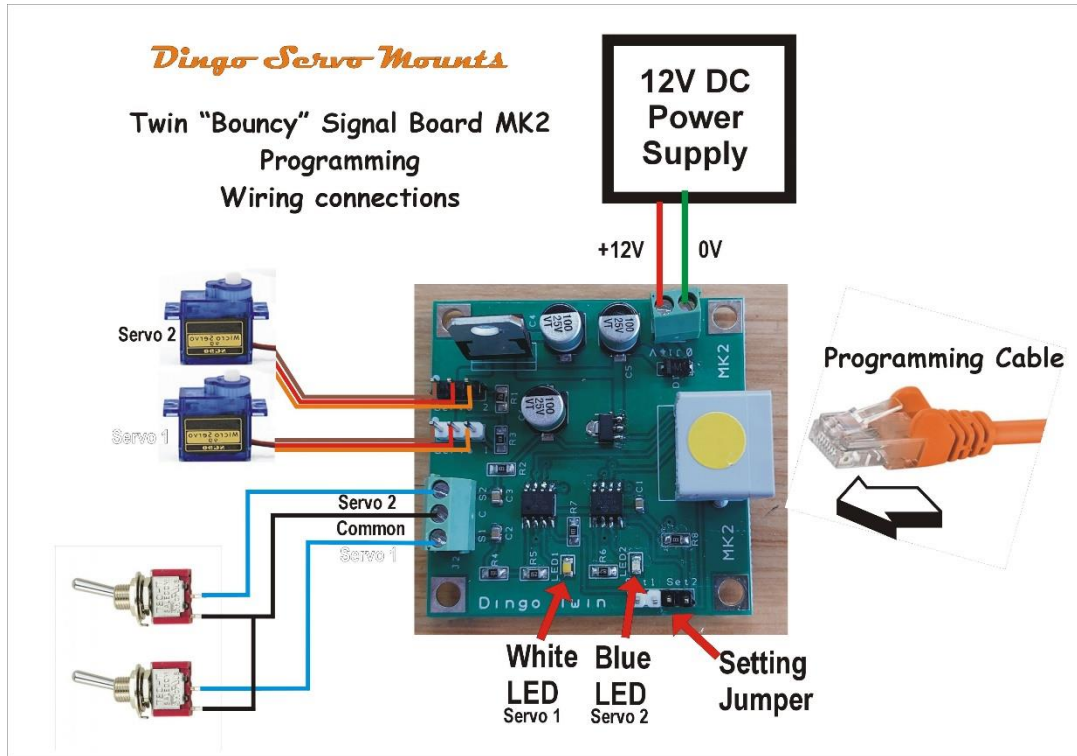
We always recommend using one of our Dingo Servo Mounts to get optimum performance from your servo on your layout.

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's 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 De Luxe Setting Box needs to have a network cable (Cat5) plugged into the back of the unit. (There is a short cable supplied)

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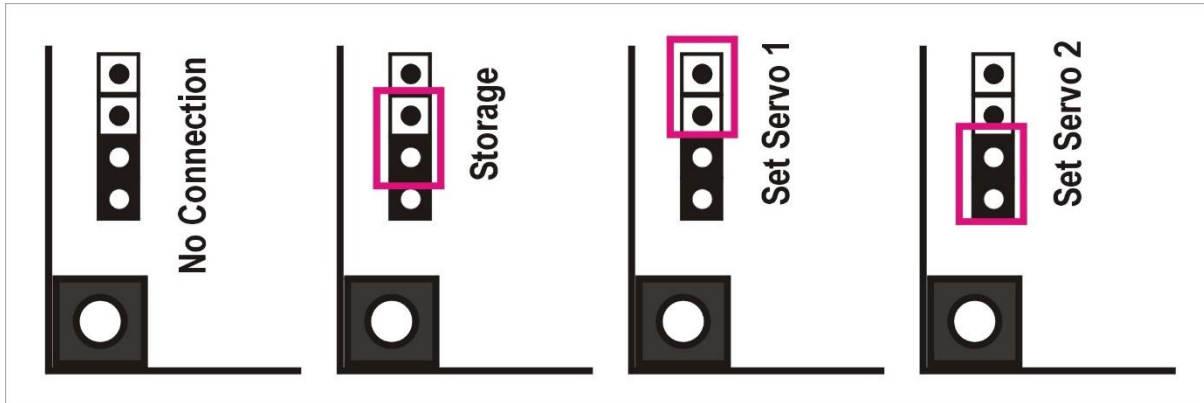

Now you need to use the included jumper to set the respective servos.

With setting Jumper moved to top position you can set Servo 1 (White Setting Pins)
Immediately the White LED will flash twice and then go out indicating that the board is now in setting mode.
For a lower Quadrant signal this will be Horizontal and for an Upper Quadrant this will be the up or off position.
Now operate the switch to the "CLOSED" position – the LED will come on momentarily and then go out.
Now set the Lower position by means of VR2 on the setting box.
Once this is done remove the setting Jumper 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.
If you are not sure which is the open position of the switch you can use which ever control (VR1 Or VR2) moves the servo in the set switch position. Obviously the opposite control will operate in the other switch position.

When you are happy with the setting, move the setting jumper and place it on the lower position in order to set Servo 2 (Black Setting Pins)
The Blue LED will flash twice and then go out indicating that the board is now in setting mode.
Set as above for servo 1
When satisfied remove the setting jumper and place in the central position for safe keeping.
It does not need to be on the board for operation, but the centre positions are there just for storage.

Now unplug the setting box and check to make sure that everything is functioning as required.

At anytime the settings can be changed by plugging the setting box in again, setting the required jumper and repeating the above procedure. (Note you don't have to set both units again as they work totally independently.)

NOTE! The unit will not set if the servo is pushing hard against a stop as the board won't be able to reach the setting point and will thus not set. (LED will continue to flash). Back off slightly until the LED stops flashing before removing the setting box.

The board is now set and should continue to operate to the same endstops until reprogrammed.

Please note that all settings are stored in the chip on the board or module so you need to use the board or module that you are using for the particular servo to do the setting up.

ONE FINAL NOTE! Sometimes at switch-on the servos my 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, especially as these boards are still in test production so that I can modify if required to make this a really good servo controller board.

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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.