Location of connections and switches

TOP

SERVO SIGNAL 8
SERVO SIGNAL 7
SERVO SIGNAL 6
SERVO SIGNAL 5
SERVO SIGNAL 4
SERVO SIGNAL 3
SERVO SIGNAL 2
SERVO SIGNAL 1
SIGNAL COMMON +12v

T B T B T B T B T B T B T B T B

EXTERNAL POWER INPUT FOR SERVOS 5-6 OR 7.4 VOLTS

IR CONNECTOR

SEE NOTE

KNOB

SERVO OUTPUT 8
SERVO OUTPUT 7
SERVO OUTPUT 6
SERVO OUTPUT 5
SERVO OUTPUT 4
SERVO OUTPUT 3
SERVO OUTPUT 2
SERVO OUTPUT 1

A

B

POWER IN +12v
POWER IN -0v

SERVO TRIGGER 7
SERVO TRIGGER 7
SERVO TRIGGER 6
SERVO TRIGGER 5
SERVO TRIGGER 4
SERVO TRIGGER 3
SERVO TRIGGER 2
SERVO TRIGGER 1

BOTTOM

TRIGGER COMMON –0v

Servo outputs.
The 3 pin outputs are ready to except a servo socket or extension lead.

Trigger inputs 1 to 8.
Trigger inputs require a 0 volt pulse from a reed/normal switch, when the pulse is received the servo on that input trigger will move to its next position.

Trigger common 0 volt.
Trigger common used with the trigger input see above.

Power in.
12 volt DC power in from power supply.

IR connector.
3 pin plug for connection to the IR receiver (IR model only)

Servo signal out 1 to 8.
These are ideal for an LED and will indicate when a servo has reached its travel position. There are two outputs per servo for both ends of the servo travel.

Servo common +12 volts.
Signal common used with LED indicators as above.

External +5 volts

Note:

External power source for servos.
The onboard 5 volts is not able or designed to power all 8 servos moving at the same time.
As there are so many different servos types available which have different current requirements this input will need to match the servo type you are using.
Whilst most servos are 5 volts, many of the newer more powerful types use 6 or even 7.4 volts
This connector **MUST** be removed before using an external servo power source, simply pull it off.

The controller will instantly die if this is not removed.

Setting up

Whilst the controller is programmable it may be easier to get used to using it before starting any programming. The default setting will move the servo's through there full travel, at the fastest speed. For the benefit of these instructions we will call the positions top and bottom. You will notice on the previous page we have given each of the servo signal outputs a T and B.

Firstly the controller needs a 12 DC power supply connected.

The connections are shown on the bottom right hand side of the page 1 diagram.

You should also at this time attach a servo to servo output 1 (you could add more than 1) when you power up, the bottom row of 8 red LED's will light up, the servo may also move to its bottom position (B) If you had any (which at this time we don't) LED's connected to the servo signal outputs, the B output would be active.

Attach a 150mm piece of wire to the trigger common screw terminal block.

If you now touch the servo 8 trigger screw terminal the servo will move to its other position.

At the same time the servo 8 LED's will change. Each time you touch the terminal the servo will move. If the wire is held on the terminal it will cycle through its travel. Top-Bottom. Top-Bottom Repeating the movement until the wire is remove.

In a working situation this wire could have a reed switch (or indeed any other switch) fitted inline with it, a magnet could then activate the reed switch which in turn would move the servo.

Trigger Wiring Diagram

SERVO TRIGGER 8   TRIGGER COMMON –0v

Reed Switch
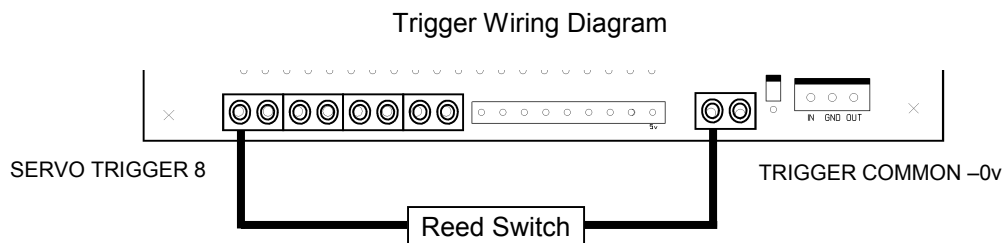
Using the remote control handset. (remote version only)

The remote requires 2 AAA batteries these are fitted in the handset battery compartment as per the diagram inside.

There are 4 setting for the remote.

1 = No remote (Default setting)
2 = Remote handset keys 1 - 8 operate the servos
3 = Remote handset keys 9 - 16 operate the servos
4 = Remote handset keys 17 - 24 operate the servos

It is therefore possible for one handset to be used with 3 servo controllers.

With the power OFF, press and hold button B whilst pressing button B turn the power on.
Button B can now be released. The controller will now cycle the LED's 1 to 4
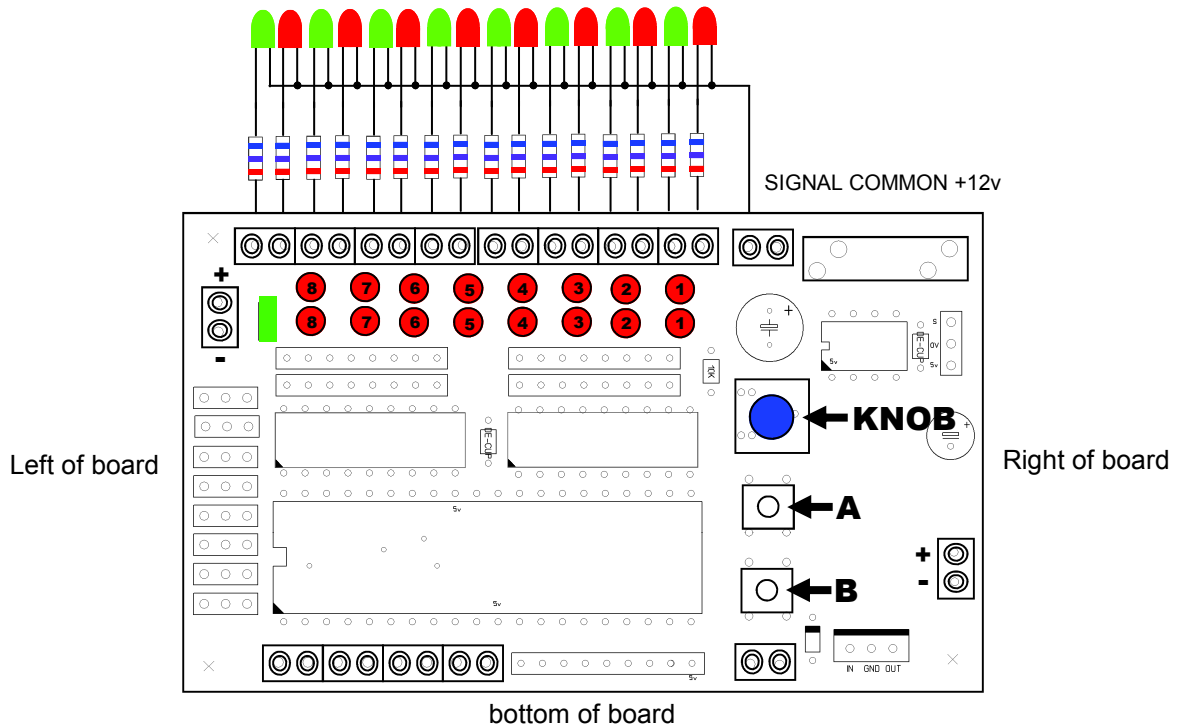When the correct LED number is on for the setting you require 1, 2, 3, or 4 press button A

Bottom row number 8 LED will now flash 3 times.

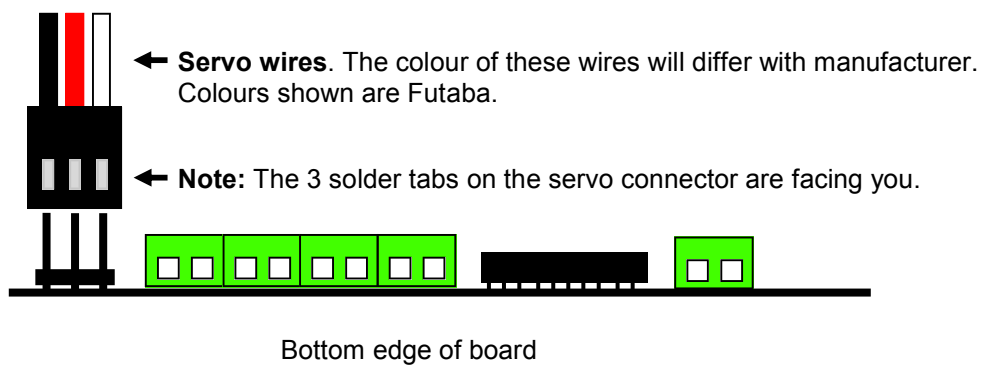The controller will now continue with its normal power up sequence.
Now the handset as well as the servo triggers will operate the servo's.

LED Connections for External Signals

SIGNAL COMMON +12v

+

-

8 7 6 5 4 3 2 1
8 7 6 5 4 3 2 1

← KNOB

Left of board

Right of board

← A

+
-

← B
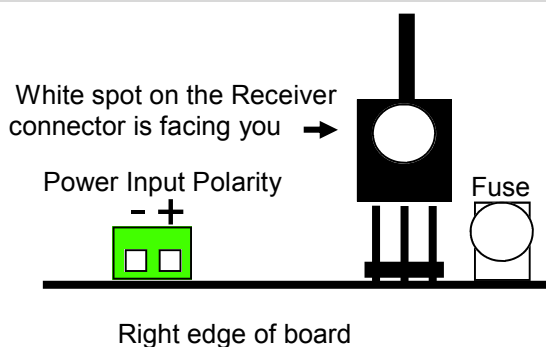
IN GND OUT

bottom of board

The Short leg of the LED has the resistor fitted. The longer legs are commoned together and wired to the 12 volt signal common screw connector block. Each output can drive 2 LED's
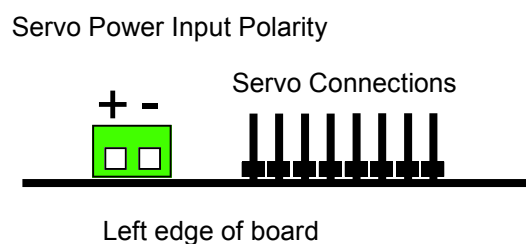
Servo Connection

← **Servo wires**. The colour of these wires will differ with manufacturer. Colours shown are Futaba.

← **Note:** The 3 solder tabs on the servo connector are facing you.

Bottom edge of board

IR Receiver and Power Input Connections

White spot on the Receiver connector is facing you →

Power Input Polarity

- +

Fuse

Right edge of board

External Servo Power Input

Servo Power Input Polarity

+ -

Servo Connections

Left edge of board

Programming the controller

There are four setting that can be set for each servo.
Servo position 1
Servo position 2
Servo speed.
Servo start position on power up which is position 1 or position 2 as set above.

These are set using button A and the blue knob.

With the power OFF, press and hold button A whilst pressing button A turn the 12 volt power on.
Button A can now be released. The controller will now cycle the LED's from right to left.
Right is servo 1 Left is servo 8.

When the LED's have reached the servo number that you wish to program press button A
Bottom row number 8 LED will now flash 3 times

STAGE 1 The bottom row number 1 LED will turn on showing you that you at stage 1 ○○○○○○○●

The servo top position can now be set with the blue knob.
When adjusting the knob the servo will respond it will also change the top row of LED's.
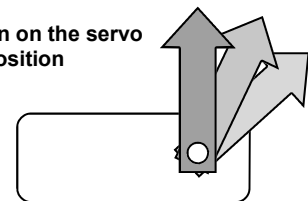The LED's will display the position of the servo in binary format. See page 5.
Once you have set this position press button A
Bottom row number 8 LED will now flash 3 times.

Looking down on the servo
Set the top position

STAGE 1

●○○○○○○○

STAGE 2 The bottom row number 2 LED will turn on showing you that you at stage 2 ○○○○○○●●

The servo bottom position can now be set with the blue knob.
When adjusting the knob the servo will respond it will also change the top row of LED's.
The LED's will display the position of the servo in binary format. See page 5.
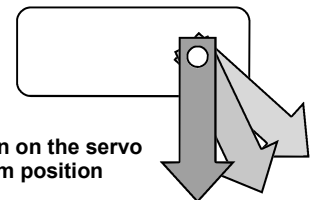As above once you have set this press button A.
Bottom row number 8 LED will now flash 3 times

STAGE 2

Looking down on the servo
Set the bottom position

●○○○○○○○

STAGE 3 The bottom row number 3 LED will turn on showing you that you at stage 3 ○○○○○●●●

The servo travel speed can now be set by adjusting the knob.
Again the top row of LED's will reflect this, in binary format. See page 5.
No LED's on = slowest speed and all 8 LED's on = fastest.
Once set press button A
Bottom row number 8 LED will now flash 3 times.

●○○○○○○○

STAGE 4 The bottom row number 4 LED will turn on showing you that you at stage 4 ○○○○●●●●

The servo start position this is where you want the servo to be at power up
This can now be set by adjusting the blue knob.
Again the top row of LED's will reflect this, in binary format. See page 5.
No LED's on = position 2 and all 8 LED's on = position 1
Once set press button A
Bottom row number 8 LED will now flash 5 times.

●○○○○○○○

Programming the Controller Continued from page 4

Now that Bottom row number 8 LED has flashed 5 times.

The programming for that servo number is now over the LED's will now start to cycle again so the next servo can be set. There is no way out of the programming mode, so if you have finished then the power will need to be turned off. All the setting you programmed are stored in memory.
You do not have to program all the 8 servo setting at one time you could program one and return at a later time.

You can now quickly test your new setting by using the wire test on the trigger inputs as described on page 2 or if you have the remote control version you can use that.
Remember that the remote HAS TO BE TURNED ON see page 2

Resetting the Controller (default factory settings)

With the power OFF, press and hold both button A and button B whilst pressing the buttons turn the 12 volt power on. The buttons can now be released.
All the LED's will now flash 5 times.
The controller will now continue with its normal power up sequence, using the default factory settings.

Setting Servo Angle

Some servo's can operate at different angles, 90 degrees is the normal and the default setting.
If your servo's can operate at 180 degrees we strongly suggest you use the 170 setting.
However the 180 degree setting is available.
The settings are set by linking a wire from the trigger common to trigger input number 1-2-or 3.
This is with the power OFF. When the power is turned on all the LED's will now flash 5 times.
Turn the power off and disconnect the wire, you have now set the angle.
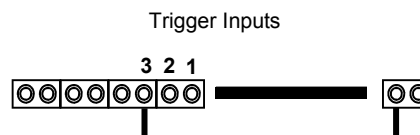
Setting for 90 degrees approx

90 degrees

Trigger Inputs

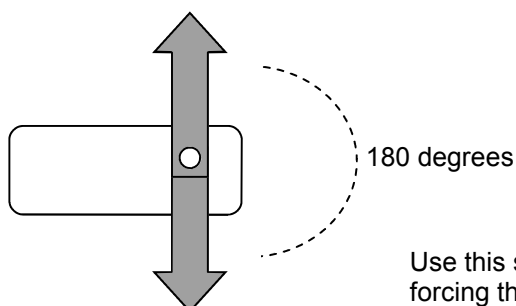3 2 1
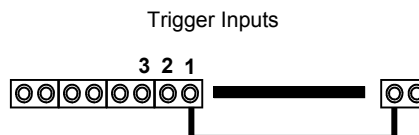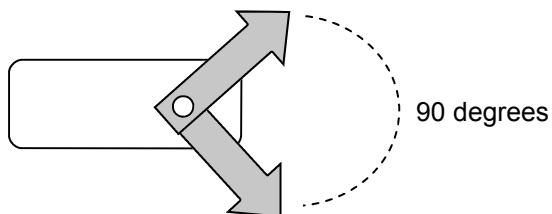
Setting for 170 degrees approx

170 degrees

Trigger Inputs

3 2 1
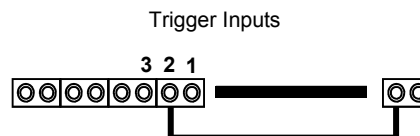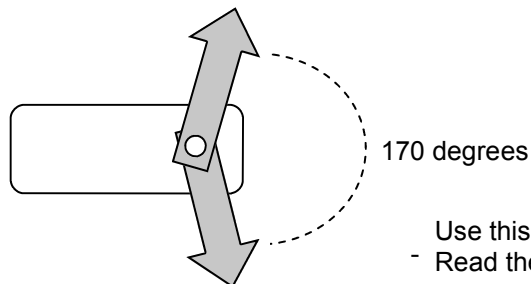
Use this setting with care, not all servo's support this angle.
Read the servo's data, or test this setting first.

Setting for 180 degrees approx

180 degrees

Trigger Inputs

3 2 1

Use this setting with care, not all servo's support this angle, by forcing the servo you may burn it out, and draw large currents.

Binary.

Binary is a set of 0's and 1's which build into a number.
A red 1 shown below represents a red LED on the controller which is on.
Any number can be represented from 0 up to 255.

This represents number 0

128	64	32	16	8	4	2	1	
0	0	0	0	0	0	0	0	= 0

Fastest speed setting

This represents number 1

128	64	32	16	8	4	2	1	
0	0	0	0	0	0	0	1	= 1

This represents number 2

128	64	32	16	8	4	2	1	
0	0	0	0	0	0	1	0	= 2

This represents number 3

128	64	32	16	8	4	2	1	
0	0	0	0	0	0	1	1	= 3

This represents number 65

128	64	32	16	8	4	2	1	
0	1	0	0	0	0	0	1	= 65

This represents number 196

128	64	32	16	8	4	2	1	
1	1	0	0	0	0	0	0	= 196

This represents number 255

128	64	32	16	8	4	2	1	
1	1	1	1	1	1	1	1	= 255

Slowest speed setting