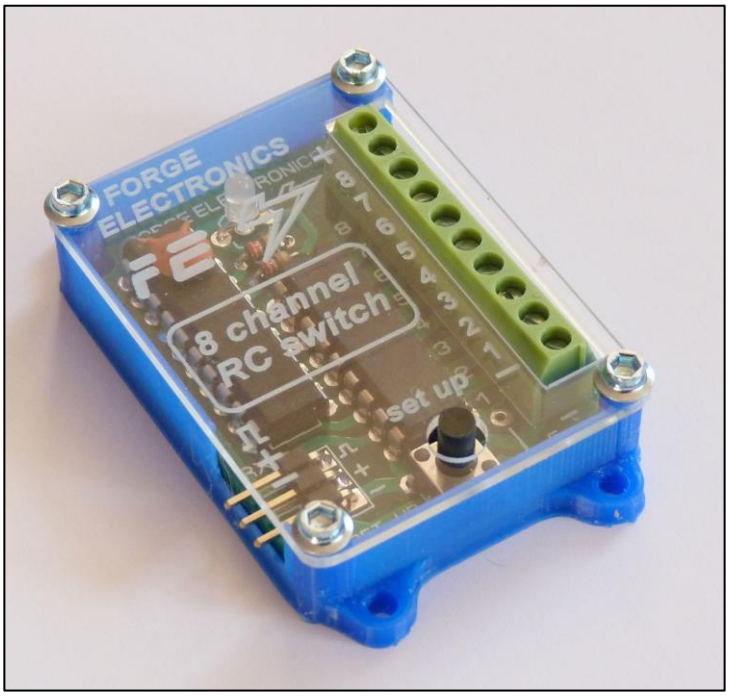
8 Channel RC Switch MK2



Up to 8 channels of lighting (or other low current accessories such as relays, radar motors, electro-mechanical sounders etc) can be individually controlled from a single proportional RC channel. The outputs are rated at 500mA each at up to 50v.

The MK2 is a revised version in a smaller, lower profile, custom 3D printed case and now features two user configuration options:-

- user selected outputs may be defined as already active at power up
- user selected outputs may be defined as latching or momentary

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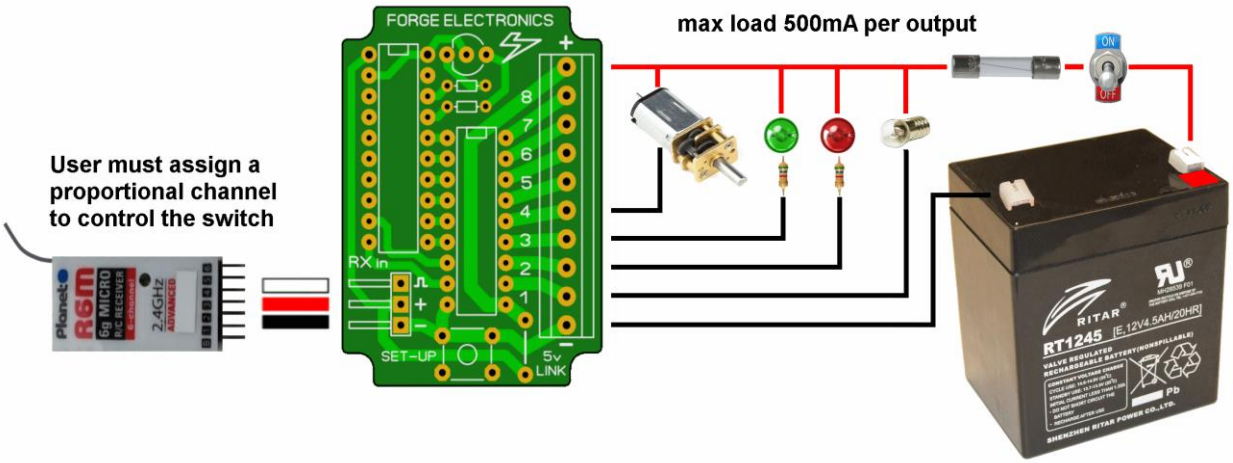
Key Features

- 8 individually addressable independent outputs
- outputs rated 500mA each at up to 50v
- user selected outputs may be defined as already active at power up
- user selected outputs may be defined as latching or momentary
- outputs switch to 0v so loads should have a common positive rail
- flyback diodes on each output so inductive loads can be switched (such as relays and small motors)
- red/green LED shows joystick movement
- optional output test at power-up
- terminal block for easy connections

INSTALLATION

The image below shows a typical connection of the receiver, battery and switched accessories.



The fuse should be rated for at least the total current draw of all the accessories being ON together, with additional allowances for the inrush current of incandescent bulbs and the start-up surge(s) of any motor(s).

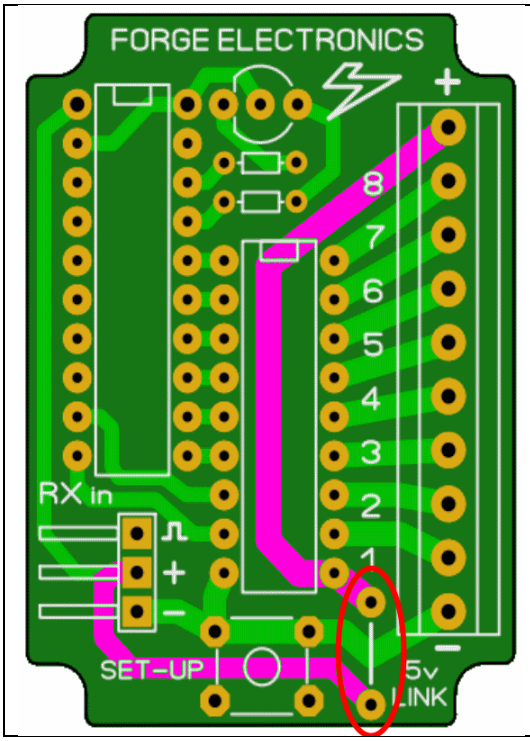
Note that any motors should be low current miniature types limited to driving radar dishes and the like – this unit is NOT suitable for operating bow-thrusters, winches etc, though a relay could be employed to do so. An alternative solution is to use the Forge Electronics Dual 10A Relay, found elsewhere on the Forge Electronics website, though as it name implies it only has two control channels rather than eight.

Note that the octal driver chip switches loads to 0v. All loads must share a common +ve supply

The microcontroller chip used in the timer has a maximum rating of 5.5v, "6v" batteries or systems with 6v BECs must NOT be used.

The 5v Link

As a wiring aid to those users planning to run LEDs or (under-run) 6v 'grain-of-wheat' type bulbs from the system's 5v supply, provision has been made for users to solder in an ***insulated*** wire link which connects the 5v supply from the receiver to the positive side of the various loads.



Insulated - note the 5v link crosses the 0v supply track which is only protected by solder resist.

Now, in the installation diagram you must ***omit the battery*** and switch. If you wish to fit a fuse that can be wired in as the 'link'

Omit the battery - note that with the link inserted there is the potential danger of connecting eg a 12v battery to the '+' terminal as per the wiring diagram which would blow up the 5.5v rated micro-controller chip, probably the receiver, and anything else connected to the latter – ESCs, servos, sound units etc.

I will not accept responsibility for damage occurring should you choose to use this facility – be sure you know what you are doing !

OPERATION

Power Up

The LED blinks RED at approx. one second intervals until the signal from the attached receiver is determined to be within the valid RC signal range of 1 to 2 mSec. For safety, many 2.4GHz receivers output zero signal until they have 'locked-in' to the transmitter which can take a few seconds.

Assuming the joystick is in the central (1.5mSec) position the LED changes to pale green once the receiver signal is established. This serves to show the unit is powered and awaiting user input.

Channel Selection

This is accomplished by the user repeatedly 'jabbing' the joystick in the appropriate direction to turn the chosen channel ON or OFF – eg three times for channel 3 and 5 times for Channel 5. On the final 'jab' the joystick should be held displaced until the channel output is asserted or cancelled.

As stated in the installation diagram, the user must assign a proportional channel to drive this module, and *best results are obtained if the joystick is a spring return to centre type and is fully displaced to its limit when 'jabbing'.*

The LED shows bright GREEN when the joystick is moved beyond the threshold in the ON direction and similarly it shows RED when beyond the threshold in the OFF direction. When the joystick is held displaced to select the channel, after a short period the LED begins to flicker to indicate the hold period has been reached and the appropriate channel will be asserted or cancelled as appropriate. The joystick can then be released and the output will remain in its chosen state (assuming the latching mode is active).

The LED's transition from bright GREEN/RED to flicker gives a useful indication of how long the HOLD must be asserted in order to turn the channel ON/OFF - or perhaps more usefully, how little time the stick can remain in the held position between successive 'jabs' – an unintended channel may be selected if during the sequence of 'jabs' the joystick is at the HOLD position for too long. Similarly if during a sequence of 'jabs' the joystick remains in the centre position for too long the accumulated counts will be set to zero again.

The above may sound daunting but users very quickly establish a 'rhythm' that works for them – counting aloud "one, two, three . . . . " at normal speech rate and synchronising the 'jabs' as you do so is the pace to aim at. Remember that later on the helpful LED cannot be seen when the unit is buried in the model, so practice before you hide it! The most common mistake beginners make is forgetting to hold the joystick full over on the final 'jab'.

Users should wire the most frequently used accessories to the lowest channel numbers to minimise the amount of stick 'jabbing'

Output Test

If the joystick is held in the ON position at power up then, then following receiver 'lock-in' all outputs are turned ON until such time as the joystick is released. This is particularly useful for quickly checking that all the lamps in the system are operational.

Defining Initial Output Conditions

Any or all (latched) outputs are capable of being asserted ON at power up of the unit – this can be useful for things such as navigation lights. To set channels to be ON at power up proceed as follows. Hold the button pressed BEFORE powering up. At power up the LED will show ORANGE and the button may now be released. Operating the unit as normal turn on the outputs you wish to designate to be ON at power up. When you have finished selecting the channels switch off the power. At the next power up, following receiver 'lock-in' the selected channels will be turned ON automatically.

To deselect a channel follow the same procedure, but turn the channel OFF whilst the LED is showing ORANGE and the cycle the power.

Selecting Latched/Momentary Operation

Following a routine power-up, select a channel in the usual manner but this time keep holding the joystick in the HOLD position. With your other hand press the button. The LED will first show RED (momentary) and after a further press the LED will show GREEN (latching). Repeated presses will cycle RED/GREEN indefinitely. Release the joystick when the appropriate colour is being shown to configure that channel accordingly.

Users should note that defining an output to be ON at power-up implies that 'momentary' operation of that output is not required and so if the 'momentary' setting of that channel is already set it will be automatically cancelled.

Similarly the opposite situation applies - setting an output to be 'momentary' implies that being ON at power up is not required and so if a channel's initial condition is already set to be ON at power up it will be automatically cancelled.