

Features

- Dual high current 2.5Amps¹ switches
- Single channel input controls both switches
- Configurable as a single 5A switch
- Ultra-light: 4g
- Low current consumption: 5mA
- Wide input voltage: 2.7V to 5.5V
- Built-in flashing routines

Applications

- Strobe and/or Lighting System (eg. Landing Lights)
- Smoke System
- External Relays for Higher Power Switch

1 Description

RCSwitch is a miniature dual-switch capable of handling 2.5A per switch. The control of these switches are unique in that they only need a single channel to operate both switches. The state of each switch depends on the position of the stick (or the programmed lever position on the transmitter). When the switch is closed, the supply voltage appears across the positive and negative output pins. This is suitable for driving strobes, high-bright LEDs, lights and 5V relay coils directly (a fly-back diode is required for inductive loads such as coils or motors).

2 Connections

Insert the RCSwitch's RC lead into the receiver channel intended for use. There are 2 options when connecting a load to the switches. The schematics are shown alongside. Use option 1 when the load to be powered must be supplied from the input voltage (usually 4.8V). Use option 2 to power a load from an external supply (max 16V), for example, a 12V relay coil supplied from a car battery. In this case pin 1 must be connected to the external supply's ground (0V).



¹ Dependent on availability of current from supply.



3 Operation

The switches are configured to turn on, flash or turn off depending on the transmitter stick position. When the transmitter stick moves from one extreme to the other, the RC signal generally changes from 1.2ms to 1.8ms, although this can vary from manufacturer to manufacturer, and are adjustable on some radios. The table below illustrates how each switch will behave when the transmitter stick is moved from the lowest position (1.2ms) to the highest position (1.8ms):

Input Pulse Range (ms)	< 1.29	1.29-1.35	1.35-1.41	1.41-1.47	1.47-1.53	1.53-1.59	1.59-1.65	1.65-1.71	> 1.71
Switch 1	OFF	OFF	OFF	FLASH	ON	ON	FLASH	FLASH	ON
Switch 2	OFF	FLASH	ON	OFF	OFF	FLASH	ON	FLASH	ON

When the switch closes, pin 3 is switched to ground (0V). The positive terminal (pin 2) will always be at the supply voltage (normally 4.8V) and may be used as a supply to drive loads directly (see Option 1 on the diagram labelled "Switch Schematic" on page 1). It is also possible to switch an external voltage up to 16V to ground (to activate a 12V relay coil, for example) by leaving pin 2 unconnected and connecting the load's ground terminal to pin 3, which is connected to ground when the switch closes. In this configuration, the external supply must have its ground (negative terminal) connected to pin 1 and/or the negative wire on the 3-wire input. See Option 2 on the diagram labelled "Switch Schematic" on page 1. If the external supply voltage is above 6.0V, **DO NOT** connect the external positive supply to pin 2 or the positive wire on the 3-wire input.

To configure the RCSwitch to handle up to 5A, connect pin 3 on both switches together. If pin 2 is being used to supply current (Option 1 on the switch schematic), also connect pin 2 on both switches together. It is very important to operate the transmitter stick either below 1.29ms or above 1.71ms so that both switches are either fully off or fully on. Anywhere between this range will result in one switch being off and the switch that is on will not be able to handle the full 5A load. Generally it is best to set up a switch (eg. Gear switch) on the transmitter for this purpose and make sure both switches are on and off when the switch is toggled. Test this with a small load first and once verified it works as required, connect the full (up to) 5A load.

4 Driving Inductive Loads

When driving relay coils or a motor, a flyback diode **MUST** be used. General purpose diode, part number 1N4001, is recommended. It is available from most electronic component supply outlets. The diode's cathode, identified by a ring on the casing, must be connected to the positive (+V) terminal with the anode to the negative terminal, as shown. **Failing to add this diode will destroy the RCSwitch when driving inductive loads.**

5 Technical Information

Absolute Maximum Ratings

Operation cannot be guaranteed outside the absolute maximum ratings.

Minimum Input Voltage.....	2.7V
Maximum Input Voltage.....	6.0V
Max Switch Current (continuous at Vin = 5.0V).....	2.5A
Max Switch Current (1s Pulse).....	3.5A
Operating Temperature Range.....	-25°C to +85°C
Storage Temperature Range.....	-65°C to +150°C

WARRANTY

FirmTronics guarantees this product to be free from defects in materials and workmanship for a period of 90 days from the original date of purchase, verified by a sales receipt. This warranty does not cover incorrect application, incorrect installation, components worn by use, reversed voltage, improper voltage, tampering, misuse or shipping. Our warranty liability shall be limited to repairing the unit to our original specifications and in no case shall liability exceed the original cost of the product. By the act of installing or operating this product, the user accepts all resulting liability. We reserve the right to modify the provisions of this warranty at any time without notice.

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RCSwitch User Guide

