

P69

Pico Twin Switch

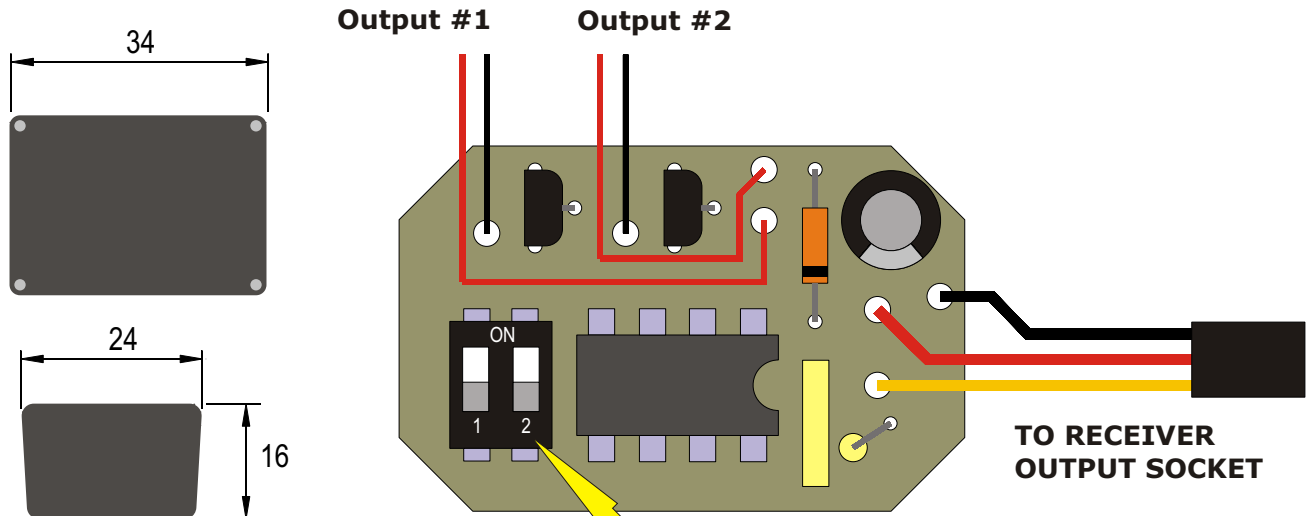
This "pico" Twinswitch requires a spare channel which has a 1 to 2 millisecond positive output. As this is pretty much industry standard, it will work well with most R/C outfits. It plugs in like a servo and gets its power via the servo lead from the receiver. It was designed to provide two switched functions from one channel. The function of each switch can be selected by use of an on-board switch. Latching or non-latching outputs can be selected for each switch. Ideal for use with micro receivers such as the Hitec Feather 5 channel 40 mhz FM.

MICROCOMPUTER & MOSFET DESIGN

Number of switch functions	2
Latching & non-latching function	Switch selectable
Radio control channels required	1
Switching points	Fixed, no adjustment
Maximum receiver voltage	6 volts*
Minimum receiver voltage	4.8 volts
Maximum current each output	0.3 amp (300ma)
Output connections	Wired

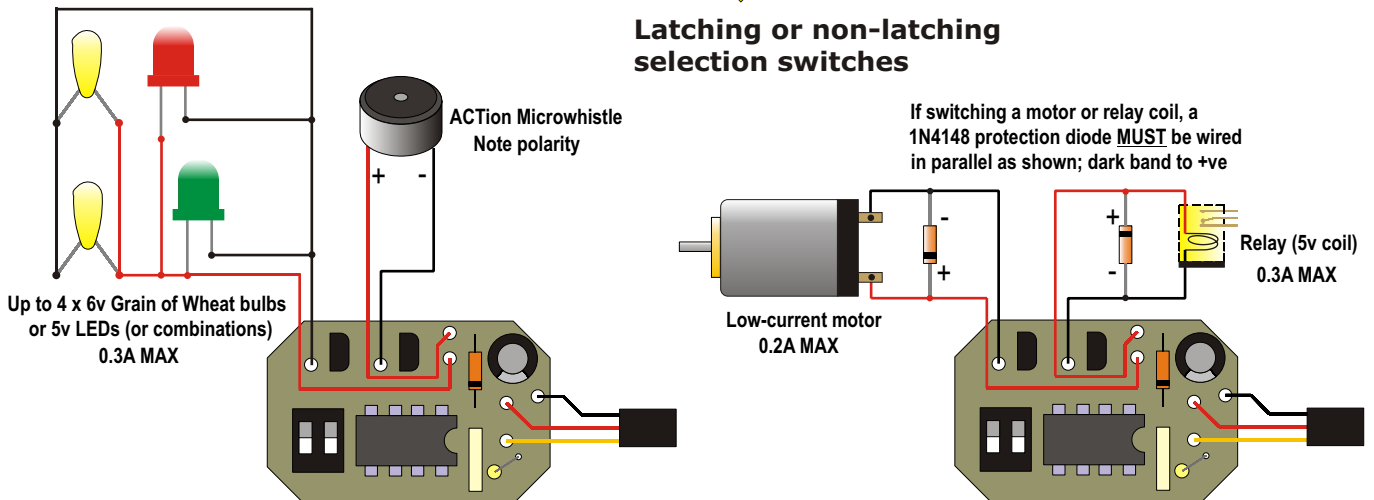
*Do NOT use a 5-cell rechargeable pack or 6v Lead-acid battery to power the receiver *directly*; it will fatally damage the unit.

Power *via* a regulated 5v supply such as a BEC-equipped speed controller or ACTION power board will be fine.



Case Dimensions

Latching or non-latching selection switches



SOME TYPICAL INSTALLATIONS OF P69

P69

Pico Twin Switch



The "pico" Twinswitch requires a spare channel which has a 1 to 2 millisecond positive output. It plugs in like a servo and gets its power via the servo lead from the receiver. It was designed to provide two switched functions from one channel. It will only work correctly when connected to a channel which is operated by a spring-centered transmitter stick, a rotary knob or a 3-way (On/Off/On) switch. Channels with simple 2-way (On/Off) switches are not suitable. The function of each output can be selected by use of an on-board switch. Latching or non-latching outputs can be selected for either switch. It is ideal for use with micro receivers such as the Hitec Feather 5 channel 40 MHz FM.

Number of switch functions	2
Latching & non-latching function	Switch selectable
Radio control channels required	1
Switching points	Fixed, no adjustment
Maximum receiver voltage	6 volts*
Minimum receiver voltage	4.8 volts
Maximum current each output	0.3 amp (300ma)
Output connections	Wired
Case size (external)	33.5mm x 23mm x 15.5mm

***Do NOT use a 5-cell rechargeable pack or 6v Lead-acid battery to power the receiver *directly*; it will fatally damage the unit.**

Power *via* a regulated 5v supply such as a BEC-equipped speed controller or ACTION power board will be fine.

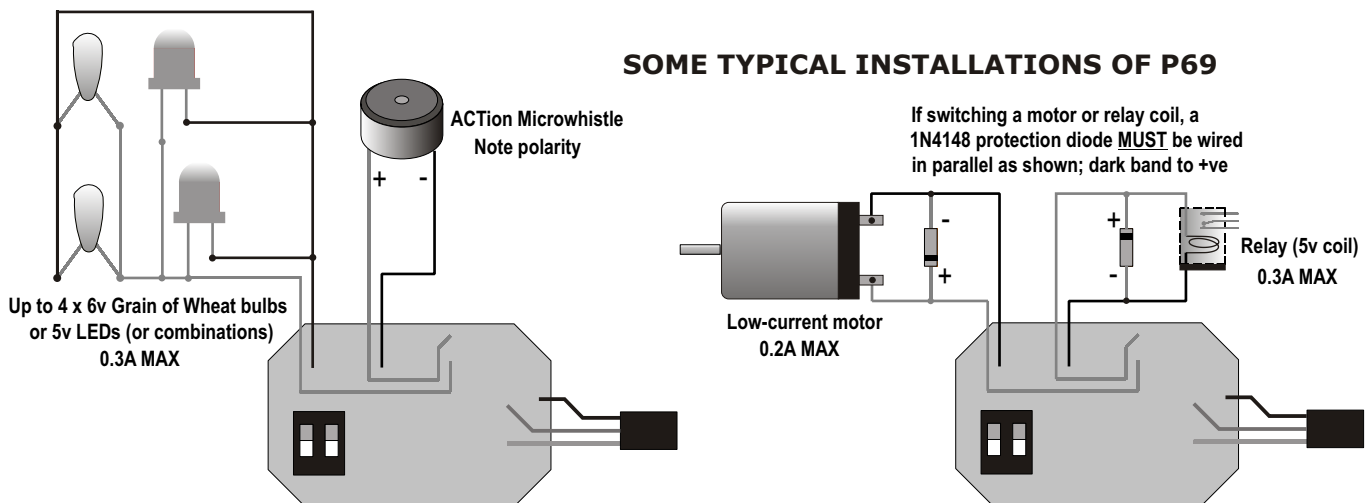
CONNECTION IS SHOWN ON THE DRAWING

Plug servo lead into a spare r/c channel (i.e. not steering or speed)
 Connect whatever number of bulbs (or other loads) you require to the red and black wire pair on each switch output.
 Switch on transmitter first, then the receiver in that order.
 Moving the stick up and down (or left and right), you will switch either of the outputs on. Using Tx channel reverse switch will reverse the switch action.
 The little dual switch will change each output from 'latching to non-latching'. In the OFF position the switches are latching. File slots in the top edge of the case to permit the wires to enter the case to suit your installation. Use Velcro pads to secure the case to the inside of the model.

RECOVERY SERVICE

A recovery or repairs service ensures that you will not be left with a dead unit for any reason. The Service Charge for this kit is £13.00 including parts (including return shipping cost IN UK).
 All returns should include full Credit Card details (Name & Address of cardholder, Card Number, Expiry Date and Card Security Number)

ACTION R/C ELECTRONICS, 1 Llwyn Bleddyn, Llanllechid, Bangor LL57 3EF, United Kingdom

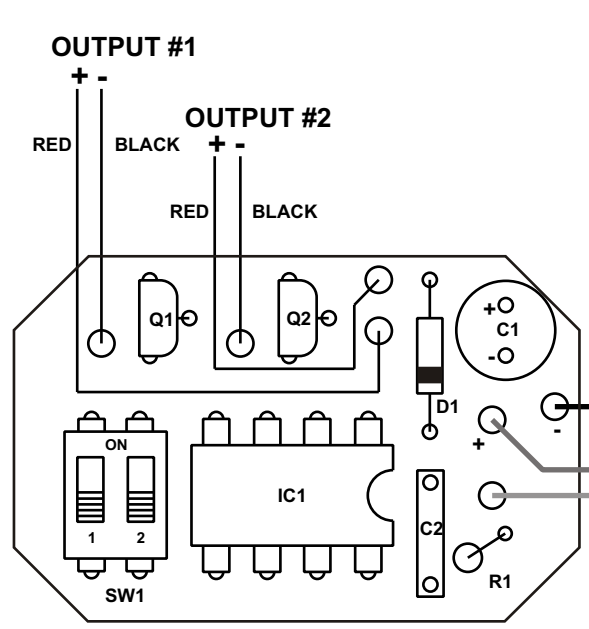


ACTION units shown are polarity-critical! Take care to connect them correctly!

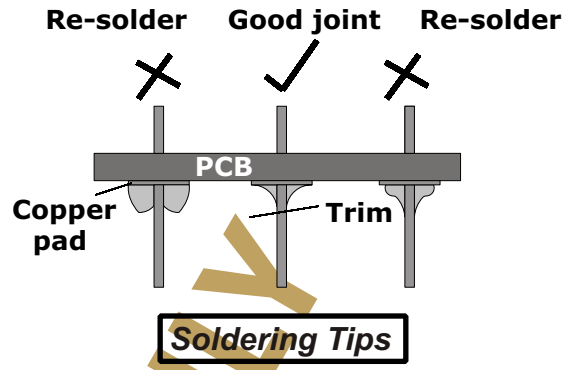
The small print.....
 ACTION R/C Electronics guarantee all products to be free from manufacturing defects for 12 months from date of purchase. This does not cover suitability for specific applications; components worn or damaged by use, tampering or incorrect connection; alteration to original components; damage to batteries or other equipment through use; misuse, or shipping damage. Where goods are found to be faulty, the customer shall return them to ACTION R/C Electronics in their original condition and with their original instructions, packaging etc. Our liability is limited to repairing or replacing goods to their original specification and will not exceed the cost of the goods. By using the product the user accepts all liability. Where a fixed repair charge is applicable, ACTION R/C Electronics shall undertake repairs to the extent that they are judged economically viable. Where such is not the case then the customer will be offered the option of crediting the repair charge towards the cost of a new unit or having the faulty unit returned and the charge refunded (less the cost of return carriage). We reserve the right to modify this guarantee without notice.



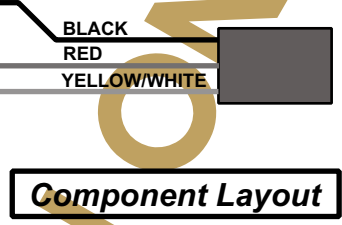
P69 pico TWINSWITCH
Instructions for Kit version



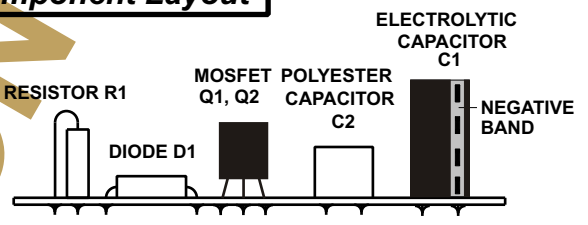
SWITCHES - "ON" = NON-LATCHING
"OFF" = LATCHING



Soldering Tips



Component Layout



Component mounting details

PARTS LIST

- IC1 PIC12C508/04 (programmed) IC + 8 pin IC socket (see notes on handling)
- Q1,Q2 ZN2106A MOSFET transistors (see notes on handling)
- D1 1N4148 DIODE (small glass component)
- R1 1K ohm resistor 1/8 Watt
- C1 22uF min radial electrolytic capacitor
- C2 0.22uF poly capacitor (marked .22 63)
- SW1 Dual subminiature switch
- CASE TYPE RX2005
- PCB TYPE P69
- LEAD Futaba generic type supplied, with alternative HiTec/JR plug
- WIRE Not supplied with kit - any really fine flexible wire is suitable for loads

P69 KIT INSTRUCTIONS

TOOLS

For construction you will require a soldering iron with a fine pointed bit and flux cored solder (22 SWG recommended); a small pair of wire cutters and, of course, a good level of light.

PARTS - DO NOT HANDLE ITEMS IN BLACK CONDUCTIVE FOAM UNTIL INSTRUCTED. (MOS DEVICES)

- The PCB has an insulated (Component Side) and a tinned track side. Components are mounted on the insulated side and soldered on the track side. The PCB for this Project is fully prepared and requires no additional work. Look carefully at the area of the PCB you are working on when soldering to ensure that you do not apply an extra connection with a splash of solder.
 - The short bar with colour bands and a wire at each end is a resistor. There is only one in this kit so no mistakes can arise.
 - The tubular electrolytic capacitor (C1) is marked with the value and working voltage, it also has a band down one side of the plastic sleeve with (-) Negative signs on it which signifies which leg goes to the negative. The opposite leg of the capacitor, of course, goes to the positive. Capacitor polarisations (+ and -) are clearly shown on the drawing.
 - The square component with two wires at one edge is a poly capacitor C2 (marked .22 J 63); it is not polarised and can be fitted either way round.
 - The short glass bar with two wires is a diode D1; note the dark band at one end of it. This band is marked on the drawing in black and must be fitted with its dark bar as shown.
 - The dual switch component is easy to identify; it is marked with a 1 & a 2 and the word ON.

NOTES ON CMOS DEVICE HANDLING. USE A SHEET OF ALUMINIUM; COOKING METAL FOIL WILL DO.

- Place it on the work surface. Place the PCB, solder side down on it. Place the black conductive foam on it, touch the metal with the soldering iron tip and then rest your hands on it, holding them there while you read through this part of the instructions. The PCB, any tools, the MOS IC and you are now all at the same potential, i.e. static neutralised.
 - The 8-pin integrated circuit (IC1) is marked with its type code; see Drawing together with the Parts List. It is delivered in conductive foam and should be left in the foam until you are about to fit it. Being a MOS device, it can be damaged by static electricity and care must be exercised when handling. It is supplied with a socket. This will enable the builder to solder in the socket during construction, then fit the IC at the end of construction.
 - The 3 legged black mouldings with the part number ZN2106A are MOSFET transistors; care should be exercised in handling these items. Note the rounded edges on one side of ZN2106A (see Component Layout)

CONSTRUCTION

As very few parts are used in the construction of the "pico", no construction notes are really needed, just a few pointers.

- I would suggest that you fit the socket for IC1 first, it will help to give you your bearings as to what goes where. Note the small notch at one end of the plastic moulding and ensure that it is fitted as shown in the drawing, soldering all pins carefully.
 - The MOSFET Transistors (Q1 & Q2) and microcomputer IC (IC1) should be soldered in and the IC plugged into the IC socket in that order, as the last operation of construction. *Make sure they are the right way round when fitted.*
 - As each component is fitted and soldered, the spare wire should be cut off close to the PCB; Soldering Tips may help.
 - NOTE - The electrolytic capacitor C1 is polarised; ensure it is fitted the right way round.

WIRING

A 3-wire ribbon is supplied for the connection to the receiver. Connect the Positive + lead (Red) and Negative - lead (Black) to the + and - as per Layout. The third lead is the pulse signal lead (White). *Care will have to be taken to ensure that you get these connections right.*

Fit two fine flexible wires to your loads at O/P 1 and O/P 2. If the items you wish to drive are polarity-sensitive, note the + (positive) and - (negative) are clearly marked for each output on the Layout drawing. That's it; the PCB construction is complete. The rear of the board can now be cleaned with something like an old toothbrush and some spirit cleaner. Meths will do but Isopropyl is very much better. Then check all over the soldered side of the board for good joints and no solder bridges between tracks or round pads.

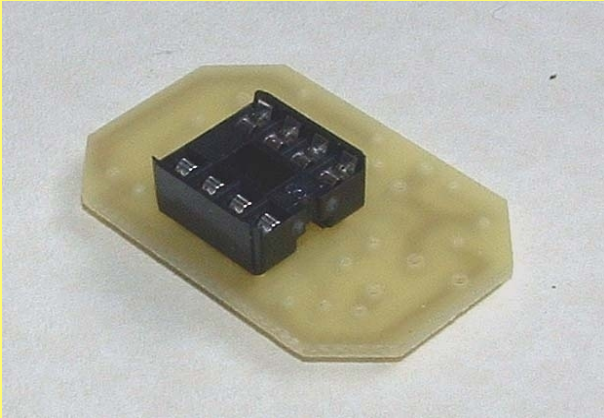
TESTING

Having built the unit connect the servo lead to your receiver, ensuring that the receiver power is switched off. Switch on your transmitter, then receiver. **MAXIMUM CURRENT IS 300 mA (0.3A) PER OUTPUT.** Select the operation you require for each output with SW1 (1=OUTPUT 1) (2=OUTPUT 2)

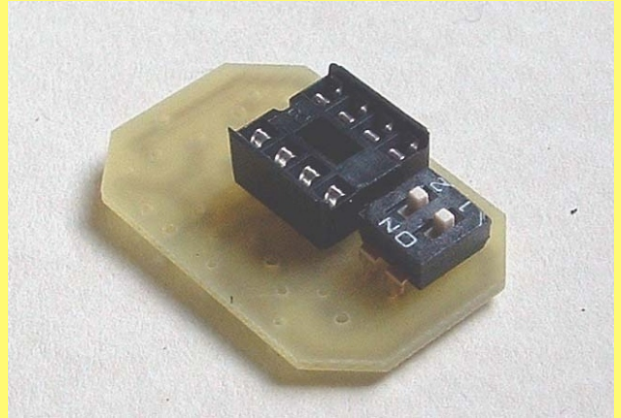
WARNING - DO NOT use the black foam as packing in the finished unit; it is CONDUCTIVE.

P69 PICO TWIN SWITCH

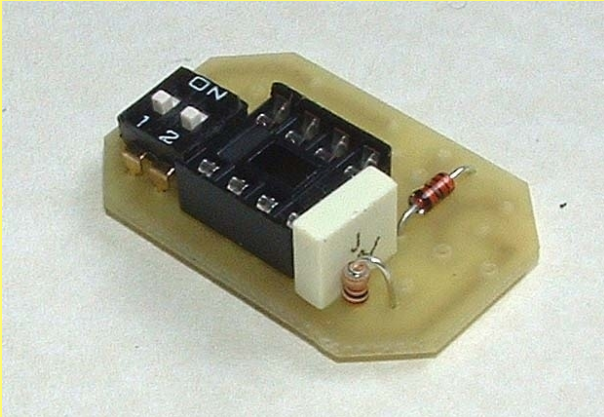
PHOTOGRAPHIC BUILD SEQUENCE FOR KIT VERSION ONLY



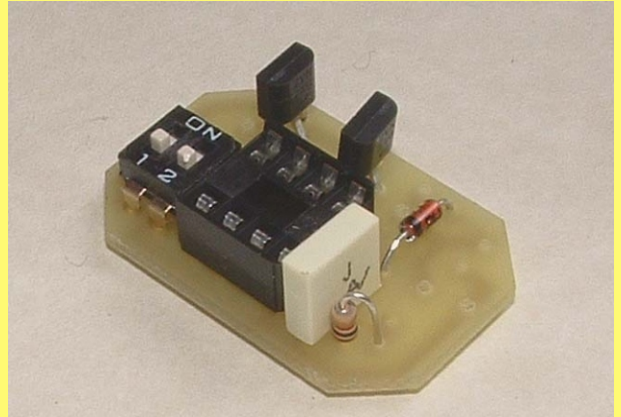
PICTURE 1: PCB with I/C socket fitted



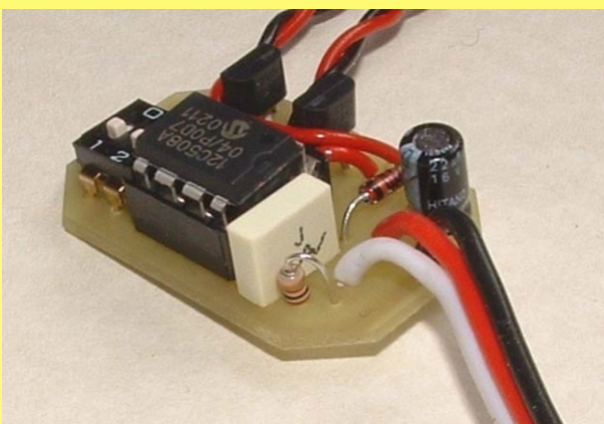
PICTURE 2: 2-way DIL switch fitted



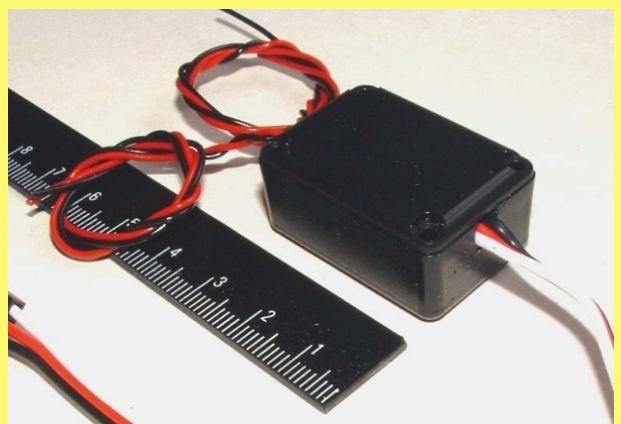
PICTURE 3: Capacitor, resistor & diode added



PICTURE 4: MOSFET transistors fitted



PICTURE 5: Fit large electrolytic capacitor, Rx lead and wires for load connections. Plug PIC chip into socket last. NOTE! ANTI-STATIC PRECAUTIONS REQUIRED



PICTURE 6: File slots in case for leads. Fit lid