K82. 2 CHANNEL UHF RELAY SWITCH

This kit allows a 2 button key-ring UHF transmitter to **toggle** or **momentary** close two relays on/off on a receiver board up to 40 meters away. Toggle mode is first described.

ASSEMBLY

Check the components in the kit against the listing.

Transmitter in Case. This comes already assembled & tested with its own 12V battery included. When you press either one of the buttons the red LED should light-up. The unit comes with no jumpers set.

Receiver Module. The 4-pin, prebuilt module solders directly into the receiver PCB.

Receiver PCB. Solder the lowest height components first. Identify the zener diode ZD, and the other 5 diodes. The bar on the diode must correspond with the bar on the overlay when it is soldered onto the board. Note that the two 3-pole terminal blocks slide fit together. Do this before you solder them into place. Note that there are two links to add to the board. C4, C6 & C8 are 0.47uF capacitors. They look the same as the 0.1uF C5 & C7. Do not mix them up. C5 goes underneath IC2.

There are two pairs of PADS. They are provided in case you want to disable one relay then reconnect it at a later date. They are already connected on the copper layer by a track. To disconnect a relay just cut the copper track with a cutter. When you first assemble the board leave them unconnected and the track uncut. Power supply to the board is 12V - 15V. The 3mm red LED should turn on when power is connected. Pressing the transmitter buttons should toggle the relays on/off.

CIRCUIT DESCRIPTION

Transmitter. When either switch is closed power is applied to the encoder IC, A5884, to the LED and to an oscillator coil. The A5884 has 10 address bits and two data bits. The 12 bits of trinary information are serially transmitted on pin 17 when either data pin is taken low by pressing the switch. The ten address lines can be tied high, low or left floating. As supplied all are left floating. It is easy to tie some or all of A0 to A9 to ground since a ground track has been provided on the transmitter PCB right next to these pins. To allow easy matching of a code we have provided a similar ground next to the decoder IC.

Receiver. It is based on a complete front-end module which processes the signal via a bandpass filter, amplifier and Schmitt trigger. Its output delivers a digital pulse train to the input of the decoder IC. Normally pin 17 is low. This pulls down the clock inputs to the 4013 to about 0.6V which is the voltage drop across D2 & D3. Pins 12 & 13 are normally high. When the decoder IC receives data with a valid address code, pin 17 goes high, and pin 12 or 13 goes low according to whichever of the corresponding pins on the encoder IC was pressed. Let us assume button II is pressed on the transmitter. Pin 12 on the decoder IC goes low. Pin 13 remains high. But on the

other side of the 100K resistor on pin 13 the line is now pulled high via D2 to pin 17. So the clock input pin 3 goes high, and relay 1 is closed. The flip-flops (FF) are connected to toggle each time a positive going pulse appears at the clock input. This is done by connecting the Q/ output to the D input via an RC network. The time constant of this network plus the C5 & C7 capacitors prevent false triggering due to noise.

When power is applied, IC2, the 4013, is reset by C8 & R18. Reset is caused by sending the reset inputs of IC2 high. When C8 is charged the voltage across R10 falls to zero. The Q output of each FF connects to a driver transistor via a 3K3 resistor. When Q is high the transistor is turned on and the relay is closed. Protection diodes are connected across each relay coil to limit the back-EMF when the relay is de-energized.

Components - Kit 82	
Transmitter module assembled & tested in case	1
Receiver module..................	1
Resistors 1/4W 5%;	
3K3 orange orange red R1 R2 R4 R8 R11 R13	6
1K brown black red R3	1
100K brown black yellow....R5 R6 R7	3
3M3 orange orange green....R9 R12	2
1M brown black green.........R10	1
100uF 16V mini ecap C1 C2 C3	3
100nF monoblok C5 C7	2
470nF monoblok..................C4 C6 C8	3
1N4004 diode D1 D2 D3 D4 D5	5
6V2 zener diode ....ZD	1
BC547 ....Q1 Q2 Q3	3
3 pole terminal block...........	2
2 pole terminal block...........	1
14 pin IC socket...................	1
18 pin IC socket...................	1
A5885M decoder IC............IC1	1
4013 ....IC2	1
LED's 5mm LED2 LED3	2
Red LED 3mm.....................LED1	1
12V relay Goodsky	2
K82 PCB	1

Momentary Action. If you just want to activate either relay while the button of the transmitter unit is depressed then remove the 4013, jumper pins 1 & 3, and 11 & 13 of the 4013 IC socket and replace R6 and R7 with 1K resistors. Actually you can just add 1K resistors in parallel to the 100K resistors already there. Now the action of the relays is momentary.

See out website at **http://www.kitsrus.com**

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