K157. A ROLLING CODE 2-CHANNEL UHF REMOTE CONTROL

This kit is a 2-channel version of Kit 180, our 4-channel UHF Remote Control kit. We have simply removed two of the 4 channels from Kit 180 and used a 2-button Transmitter unit.

Up to 15 Transmitter units can be learnt by one Rx unit. Press button 1 (the small button) while simultaneously pressing the **LEARN** tact switch on the main board. You only have to do this briefly for under a second. But note it takes about **15 seconds** for the two units – the TX and the RX - to connect and recognize each other. (During this 15 seconds it seems that one and only one keypress of the Tx unit will be recognised. Just disregard this. Wait the full 15 seconds until the two units have connected. Do not press the LEARN button again. Just wait 15 seconds.) Note the **VALID DATA** LED comes on when you press the tact switch.

Tx units attached to any Rx unit can be unattached by pressing the LEARN button continuously for 8 seconds. The **VALID DATA** LED is on during these 8 seconds. As soon as the LED goes off then you know that all Tx units previously recognized by the Rx unit have now been unattached from the Rx unit.

For the full details about the circuit, a full explanation of rolling code and the schematic download the k180.pdf from http://www.crowcroft.net/kitsrus/k180.pdf Remember this kit is 'half' of K180. Two of the 4 relay positions in kit 180 are removed.

If you want more details about the Microchip technology behind these Tx & Rx's then get

http://www.kitsrus.com/pdf/an662.pdf and http://www.kitsrus.com/pdf/an665.pdf

Technical details about Automicro devices can be got from http://www.kitsrus.com/pdf/automicro.pdf

We sell Tx unit (TX-3316RS) and Rx unit (RX-3302D2-15) separately as A17TX and A17RX.

TRACK ERROR. Now I made a **track error** when making these PCBs which, strangely, the prototype did not pick up. It is only when you try to add more than one TX units to the RX that the error shows up and does not allow you to do so. I do try to make error-free PCB's but …. I have connected each track to the tact switch to itself inside the tact switch. That is, pin 7 of the RX module is shorted to ground permanently inside the tact switch. I mis-identified which pair of legs were internally connected together; an embarrassing mistake.

Please cut one track as shown in the photo below and then jumper a leg from the tact switch 0.2" / 5mm to a pad next to it as shown in the photo. Then all is OK. Use an offcut from a resistor leg. This modification should not cause you any problem once you understand the error and look at the photos.

Although these relays are rated 12A/250VAC the PCB tracks will not carry that current. Please do not put more than 2A through these tracks. If you want to switch higher currect loads then you must jumper some wire between the terminal block pins and the relay pins.

Email me at **peter@kitsrus.com** if you have any problems. Also see our 10-channel UHF Rolling Code Remote Control, Kit 181. See the documentation at http://www.kitsrus.com/pdf/k181.pdf

Kit 180 is our 4-channel UHF Rolling Code Remote Control with 4 relays on board. See docs at http://www.crowcroft.net/kitsrus/k180.pdf

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COMPONENTS

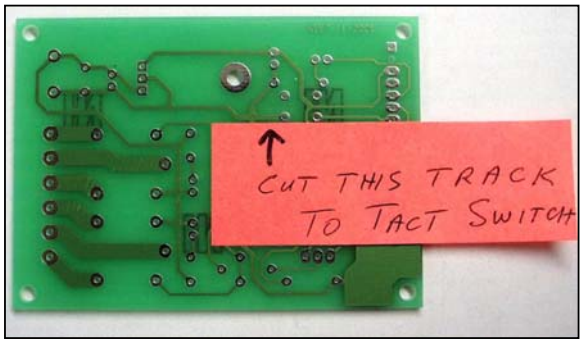
Resistors 5%, 1/4W		
1K brown black red	R3	1
2K2 red red red	R6 R8	2
4K7 yellow violet red	R5 R7	2
1M brown black green	R4	1
10M brown black blue	R1 R2	2
nut and screw set 6mm or 8mm.		1 set
1N4004	D1 D2	2
104 monoblok	C1 2 3 4	4
3pole terminal block		2
3 pin SIL header		2
Jumpers		2
100uF/16V	C5 C6	2
7805 IC1		1
4013 IC2		1
LED 5mm red		2
LED 5mm green		1
14 pin IC socket		1
BC547B	Q1 Q2	2
Pins		2
Zippy tact switch		1
12V relays RWH-SH-112D		2
Hookup wire		17cm
K157 PCB		1
TX-3316RS 2-button TX unit		1
RX-3302D2-15 10 pin RX unit		1

Assembly. Solder the lowest height components first, the resistors and diodes. Bend the legs of the 7805 with needle-nosed pliers. Mount the relays and RX unit last.

As mentioned there is a track to cut and link to make. Cut the track going to the zippy switch as indicated in the photo.

Then use an offcut from a resistor leg to jumper across two pads as shown in the other photo. Now when the tact switch is pressed pin 7 of the RX module will go to ground and **LEARN**ing of additional TX units will occur.

Two metal pins are provided for the GND and 12V+ connection



I know it does not print well. You can also view this jpg in bigger size & in color at
http://www.kitsrus.com/jpg/k157track.jpg

Connect the other side of the tact switch to ground as shown. Use an offcut fron resistor leg. See it at
http://www.kitsrus.com/jpg/k157jump.jpg

You can see the cut track.

Check Operation.
If working properly when you depress the small button 5V will appear at pin 6 counting from the top (non-earth end) of the PCB. Pressing the big button causes an output of 5V at pin 8. When you release the buttons the voltage goes to zero. This 5V is used by the 4013 for latching and momentary operation. You can trace this thru on the schematic.

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Note the Tx unit will output a signal as long as the button is pressed. (It does not time-out after say 25 seconds.)

Tx units electronically attached to any Rx unit can be **un**attached by pressing the LEARN button continuously for 8 seconds. The **VALID DATA** LED is on during these 8 seconds. As soon as the LED goes off then you know that all Tx units previously recognized by the Rx unit have now been unattached from the Rx unit.

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K157 PCB		1
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RX-3302D2-15 10 pin RX unit		1

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When the tact switch is pressed pin 7 of the RX module will go to ground and **LEARN**ing of additional TX units will occur.

Two metal pins are provided for the GND and 12V+ connection

Check Operation.
If working properly when you depress the small button 5V will appear at pin 6 counting from the top (non-earth end) of the Rx unit. Pressing the big button causes an output of 5V at pin 8. When you release the buttons the voltage goes to zero. This 5V is used by the 4013 for latching and momentary operation. You can trace this thru on the schematic.

You may download photos of the assembled kit from
www.kitsrus.com/jpg/k157_1.jpg

www.kitsrus.com/jpg/k157_2.jpg