

AN AUTO SIMPLEXER FOR THE IC22S

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The IC22S is an excellent mobile rig, but I am sure every owner has been frustrated by forgetting to switch to simplex when necessary, after changing channels. After the modification (need I say it), you will wonder how you got along without it.

The additional circuitry, costing less than \$1, is mounted on a small piece of Vero board. The only change in existing wiring is the re-location of one wire. There is provision for nine simplex channels, although this can be expanded by adding extra diodes. After modification, the DUP/SIM switch is disabled when switched to simplex channels and simplex operation is automatically selected. Repeater channel operation is unaffected.

Referring to the modified circuit (NOTE: the new IC is designated IC11), when a repeater channel is selected all anode ends of the diode OR gate are floating (i.e. not connected to +9V), therefore pins 1 and 2 of IC11 are pulled LO by the 10k resistor. By inversion, pins 3 and 12 go HI. Therefore the logic signals from the DUP/SIM switch are inverted twice and appear at the dp point on the programming matrix board with no change. When a simplex channel is selected, +9V from the channel switch turns on the appropriate diode in the OR gate. This pulls pins 1 and 2 HI and therefore pins 3 and 12 LO, this blocks logic from the DUP/SIM switch and forces pin 11 HI, therefore pins 4 and 10 LO. Now that the dp point is LO for both Tx and Rx, simplex operation is assured. The two output gates are in parallel to properly drive the 10k pull-down resistor on the PLL board.

Cut a piece of Vero board 18 strips by 4 holes, EVERY strip should have 4 holes. Cut the inner 16 strips to form pads for the IC and diode leads, file a bevel on the ends of the strips (to prevent shorts to the oscillator shield). Make the mounting lugs by tying the end strips to the board with wire, this prevents the copper from lifting when soldered (see Fig. 3). Mount the IC and diodes (see Fig. 2 for orientation) on the "component" side of the board, on the other side mount the resistor and links as in Fig. 2. Unsolder the red wire from the dp point on the programming matrix board and solder it to pin 13 of IC11, run a wire from pin 4 of IC11 to the dp point. Run the supply wire from pin 14 of IC10 to pin 14 of IC11 (see photo). Solder the end strips to the oscillator shield with the board about 5mm below the top edge of the shield, check for accidental shorts.

To set up, connect each input of the diode OR gate to a simplex position on the programming matrix board, at the points where the wires run to the channel switch. Unused OR gate inputs are left open. Example, in the original IC22S programming connections, wires should be

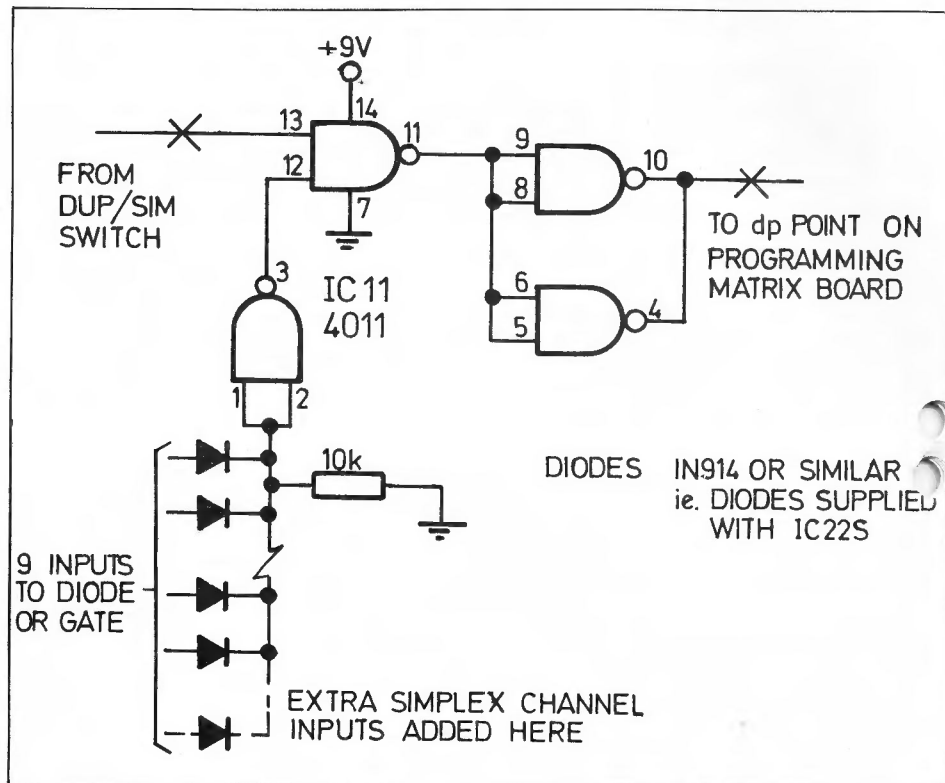


Figure 1

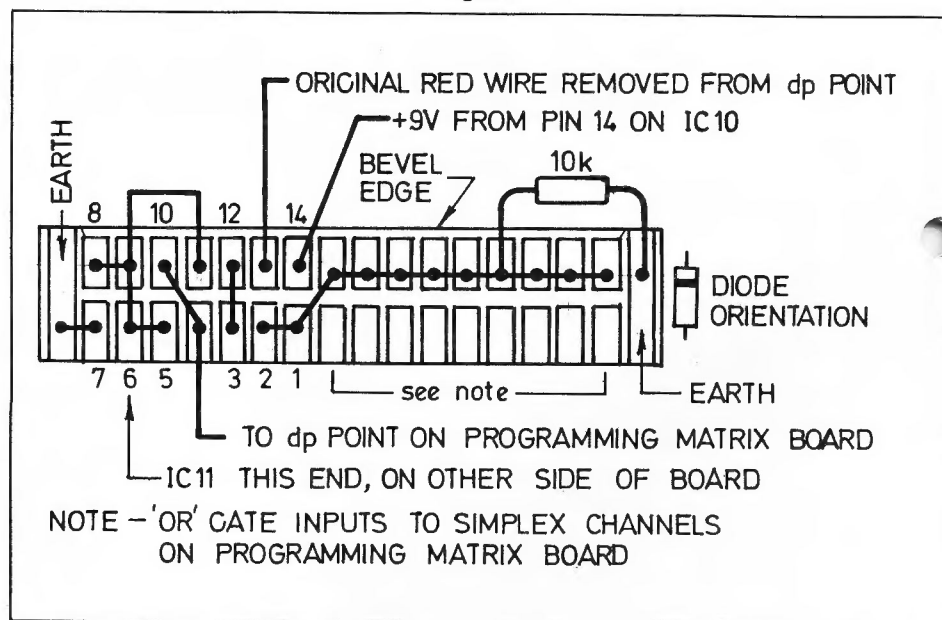


Figure 2

run from 3 diodes to positions 9, 10 and 11 for channels 40, 50 and 51.

My thanks to Arthur Hill for his help with the photography.

POSTSCRIPT

Since writing this article, it was found necessary to add a resistor from Pin 13 of IC11 to earth. This ensures proper operation when working simplex on repeater input frequencies, using the DUP/SIM switch simplex position.

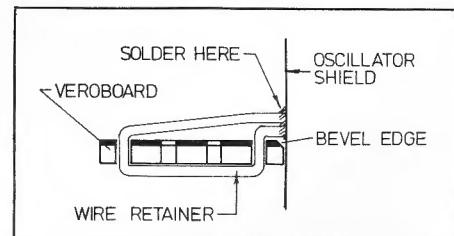


Figure 3