Auto antenna switch for the FT102

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This modification enables the correct antenna to be automatically connected to the transceiver when changing bands, and is controlled by the BAND switch on the front panel. The whole system consists of a single PCB for mounting inside the transceiver, and an outboard relay box.

All connections to the circuitry of the transceiver are made via existing plugs and sockets, and the new PCB can be removed at a later date without leaving any trace. The author fitted a 15 pin 'D' socket on the rear panel of the transceiver to allow simple inter-connection of the relay box, and this, of course, cannot be removed without leaving a hole in the back. However, for those that may be worried about resale value, it is possible to pass the inter-connecting multi-core cable through an existing hole in the rear panel, and terminate it in a cable-mounted socket.

Many other modern transceivers use a similar type of "logic" switching operated from the BAND switch, and these may be modified.

Circuit Description

1) **Principle:** One wafer of the BAND switch, together with the '+0.5'button, causes +8 volts to be applied to one of 13 wires in a cable running between these switches, the 'Counter Unit' and the 'Local Unit', as the various bands and sub-bands are selected. This cable is terminated in 13 pin plugs which mate with 13 pin sockets on the appropriate PCB, the whole cable being 'series connected' between the boards. By introducing the new 'Relay Driver Unit' PCB in series with this cable, the logic signalling voltage may be tapped off for further processing.

2) **Relay Driver pcb:** The current available from the 8 volt logic is not sufficient to drive the antenna change-over relays direct, and anyway the 8 volts used is unusual for relays of the type required. An Octal Darlington driver IC is used for the 8 lower bands, and a transistor is used for the 9th band. The input to this transistor is fed via a simple 4 input OR diode gate so that it responds to any of the 4 Ten Meter sub-bands. The 12 volts to drive the relays is taken from the 12 volt supply provided in the FT102 for such purposes.

3) **External Relay Box:** The original used 5 relays, distributed as follows:

(i)	10, 15, 20 meters	Tri-band beam
(ii)	40, 80 meters	Trap dipole
(iii)	160 meters	Loaded vertical
(iv)	17, 30 meters	Trap dipole
(v)	12 meters	Wire dipole

However, any combination of aerials may be used, and more (or less) relays fitted to suit the operator, but remember that you may wish to add extra aerials later and that each aerial requires one relay.

(Note that 5Z4 amateurs not yet allowed to operate on the 'new' bands, nor on top band).

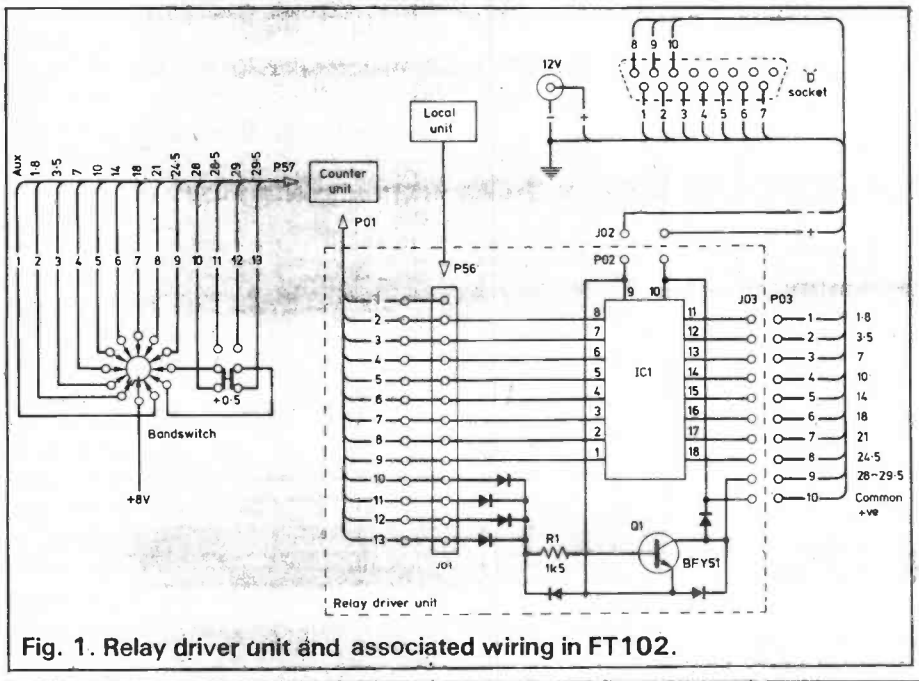

Fig. 1. Relay driver unit and associated wiring in FT102.

Construction

1) **FT102 modification:** First fit the 15 pin 'D' socket on the rear panel. This is positioned horizontally, close under the RCA Jack Board on the right, looking at the back of the set. Mark out the outline of the hole for the socket, and the two mounting holes, before starting work. Remove the top cover of the transceiver (6 screws) and un-plug the loudspeaker leads. Remove the IF unit pcb. (6 screws, 13 multipin plugs and 4 coax plugs) Carefully re-position all the wires inside the rear panel in the vicinity of the new socket. There is plenty of slack, and they may be held clear by the use of self adhesive PVC tape. Place a postcard sized piece of card (an old QSL card) against the inside of the rear panel, and on top of the