

## An Automatic Antenna Selector

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Any radio that has the facility to provide band data should be able to use this antenna selector. It was designed specifically for the Yaesu FT991 which has a DIN socket on the rear panel that supplies the band data which shows which band the radio has been set to operate on. The same DIN socket is available on older radios such as Yaesu FT90, FT920, as well as numerous older and current models. This is done with a four bit binary data word that has sixteen combinations although only nine are implemented for the HF bands from 10M to 160M.

To use this data, it is first necessary to convert the binary code to decimal and this is done with a 74LS42 integrated circuit. This IC can only work on voltages up to 7V so it is wise to run it on 5V and besides, the signals from the radio are at 5V level so it should be supplied power using a 5V regulator. There are other integrated circuits that can do decoding but the 74LS42 provides the nine outputs in an orderly manner with 160M on pin 2, 80M on pin 3 and so on.

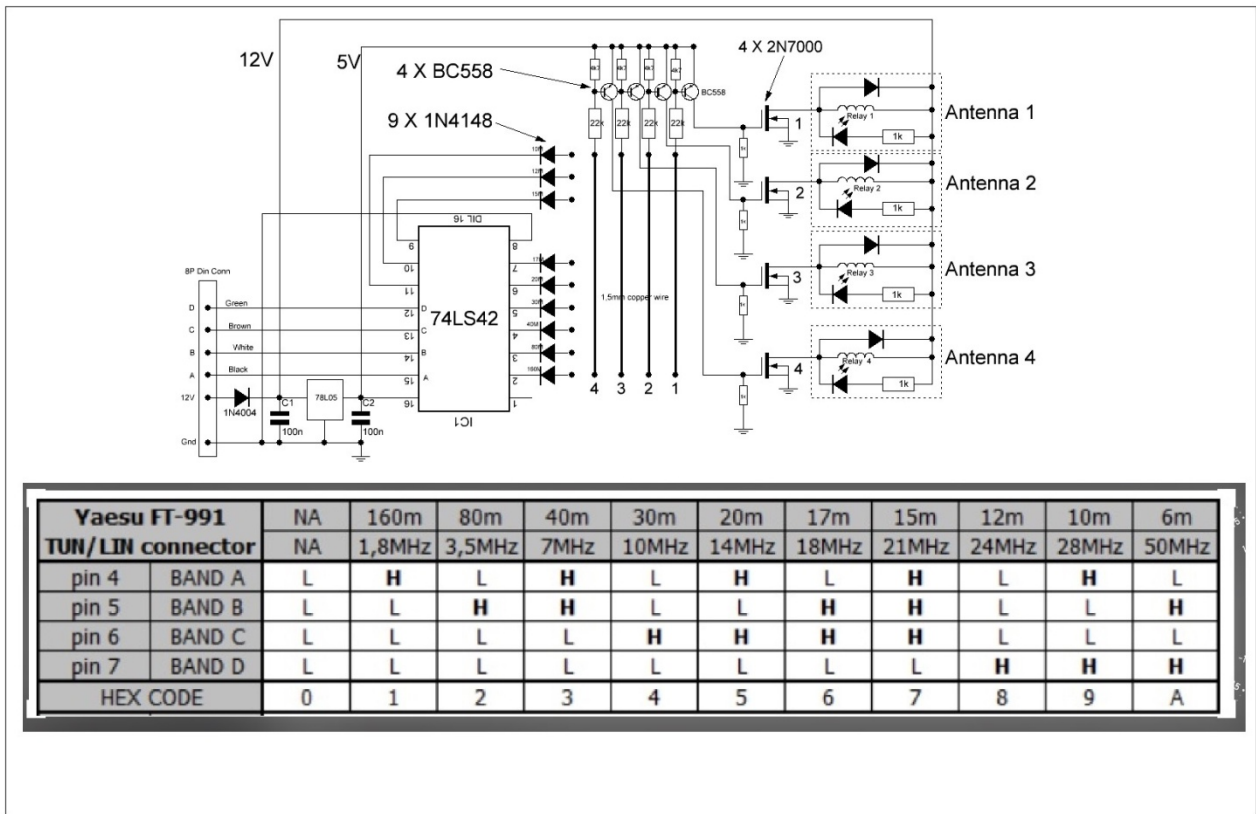
The outputs of the 74LS42 are all at high levels with only the selected band being at low level. These outputs are connected to signal diodes so that several bands can be connected to the same antenna as one would want to do when using a multiband Yagi antenna. The board layout is such that the user can select which bands to connect to which antenna using wire bridges.

In this design it was decided to make provision for four antennas although it could be more. For each antenna there is a relay that connects the particular antenna to the radio. The relays are switched using 2N7000 FETs that need a positive level to turn them on but the 74LS42 provides a negative signal, so BC558 PNP transistors are used to do level shifting and inverting and supply suitable signals to the FETs.

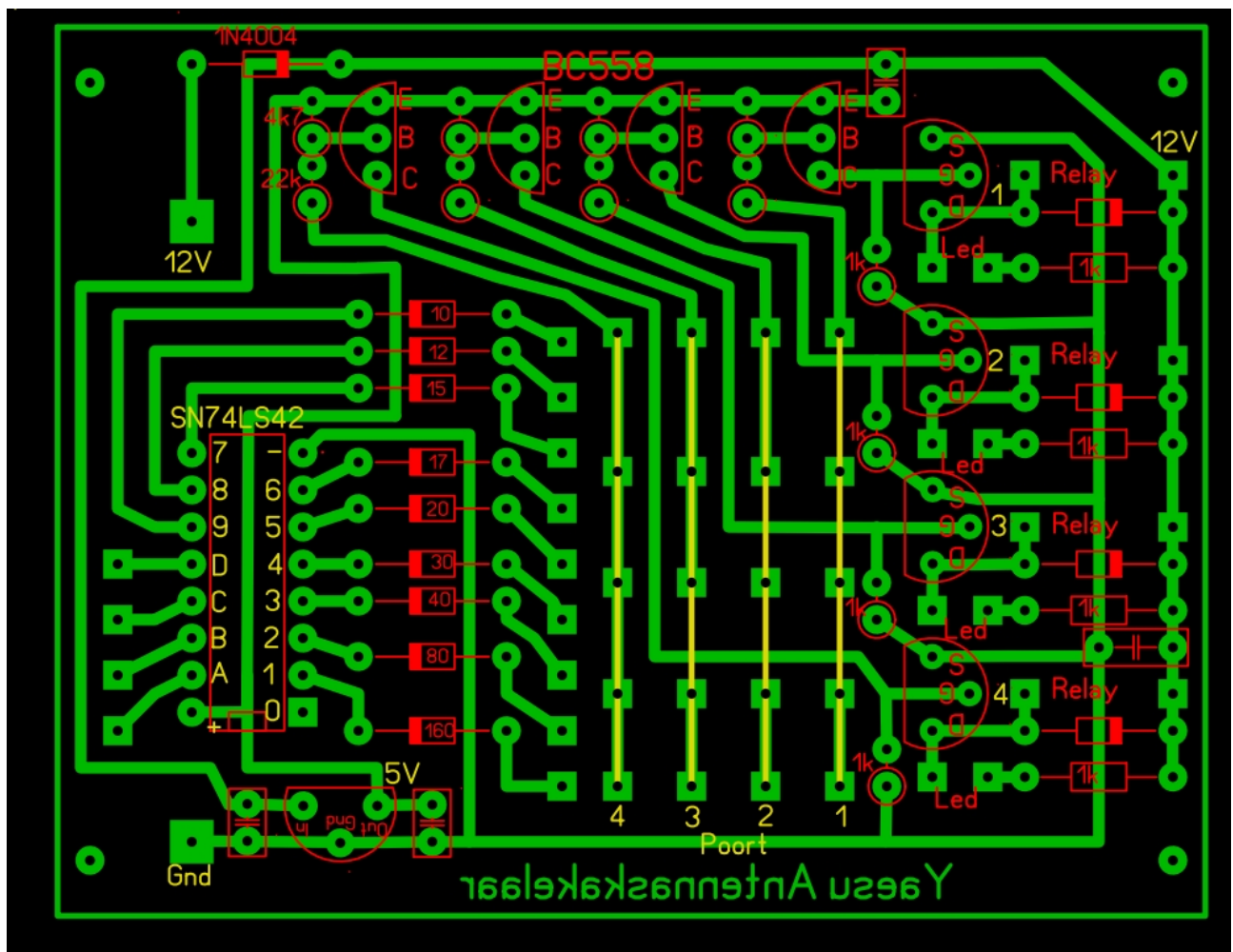
On the PC board there are four small copper bus bars connected to the four level shifters and the user can then solder wire bridges between the signal diodes and each bus bar. On the front panel are four LEDs that indicate which band is in use.

Power for the decoder is provided by the radio although an external power supply can also be used. Below the schematic diagram is a table from the FT991 manual showing how the binary code works.

### Schematic diagram:



### Board layout:



Photos:





