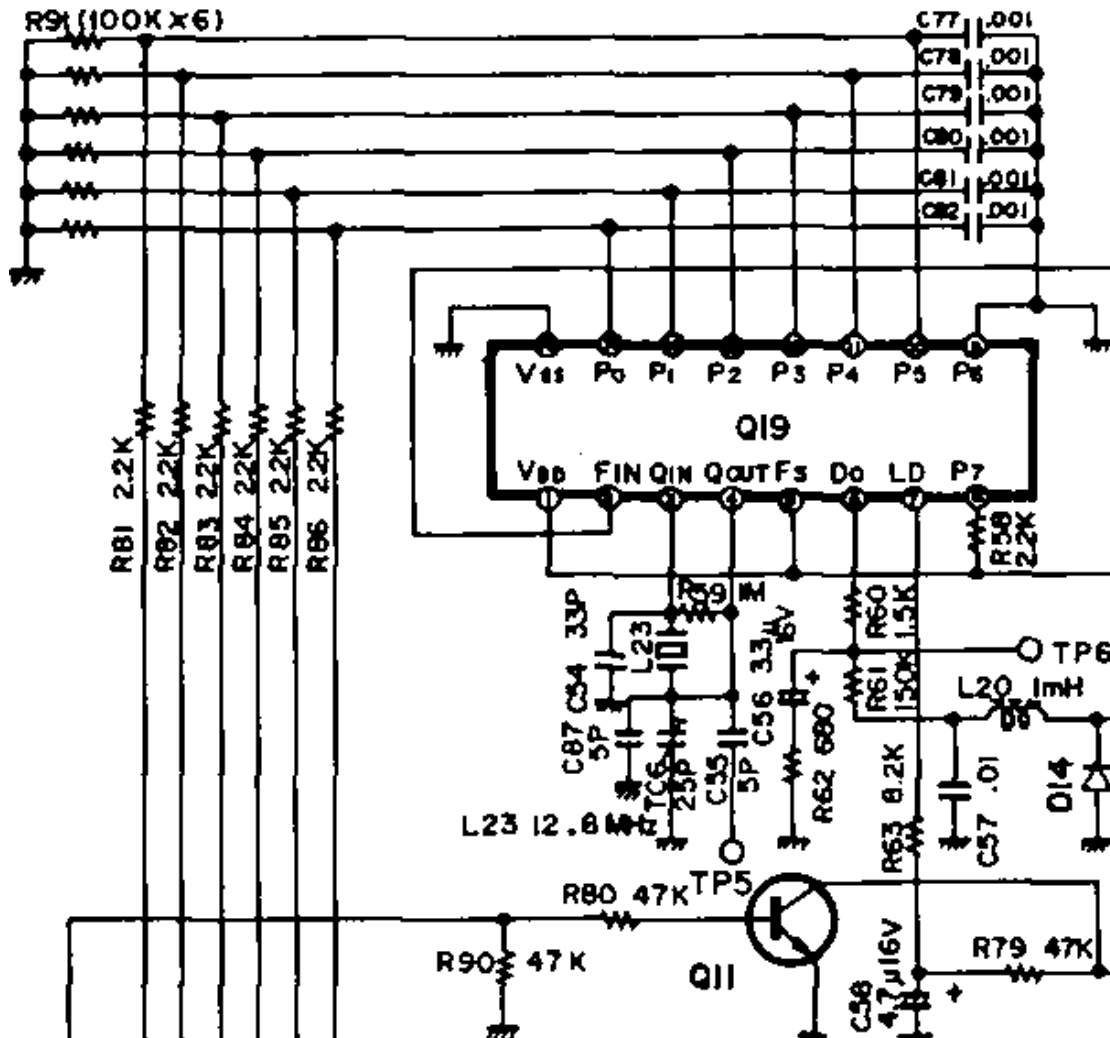


## TR-2300 Frequency step change to 12.5kHz

The question of changing the frequency step of the TR2300 to 12.5kHz, is very frequent in region using 12.5kHz channels steps for repeaters. This modification consists of changing the PLL circuit on the receiver board and using the "Aux" switch as +12.5kHz function.



First download the service manual on <http://www.mods.dk>

This modification is not recommended for you if you are not equipped with small iron tip and good frequency meter. Provide a MC145106 PLL circuit from Freescale (Motorola), not easy to find or removed it from an old transceiver or CB.

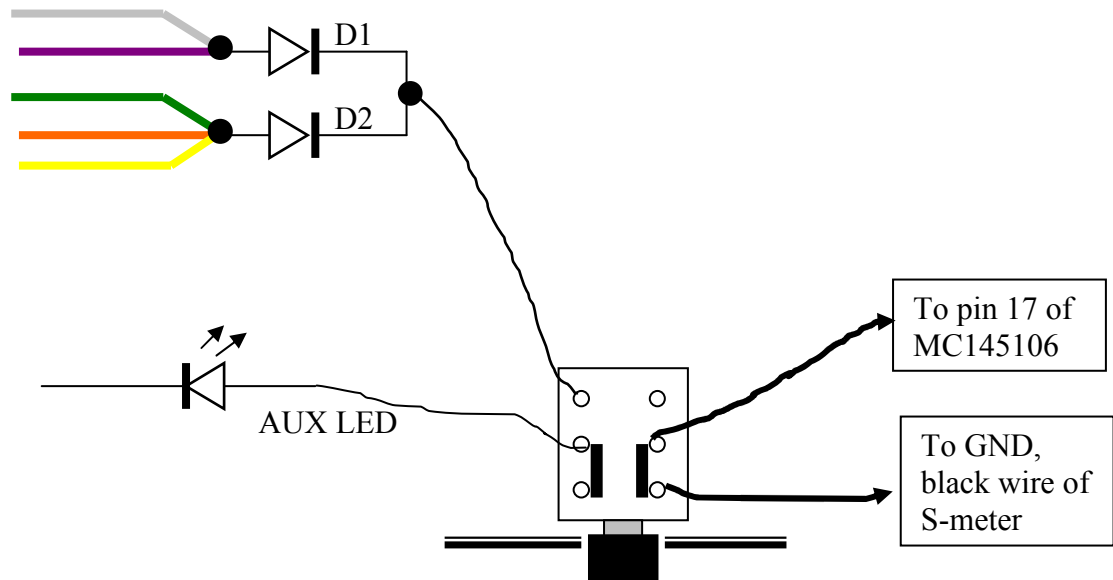
### 1) Modify the Aux switch as it is in released position :

With this modification the AUX function is disabled. On some transceiver, this switch has been modified to get the reverse function on repeater mode, this function will be also disabled.

The AUX LED will indicate +12.5kHz.

- Remove and insulate from switch blue wire from LED

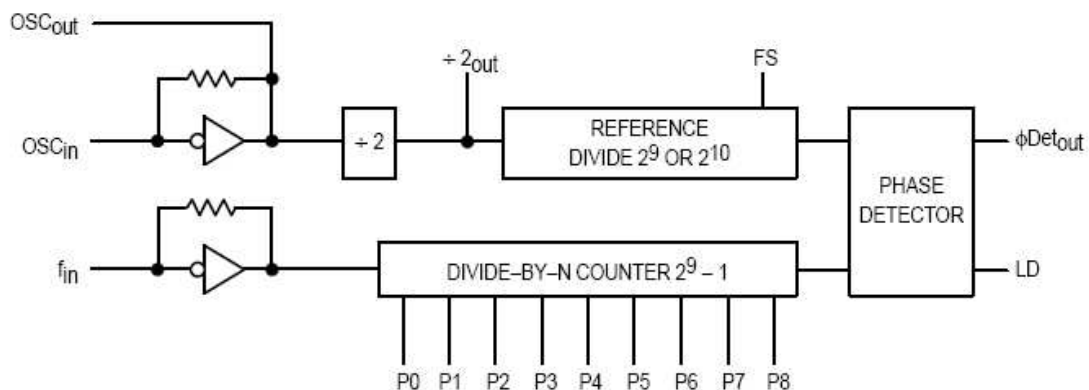
- Remove and insulate from switch brown wire
- Remove and insulate from switch white wire
- Remove grey wire from switch, remove violet wire from switch and connect them together to anode of a 1N4148 diode D1 and insulate
- Remove green wire from switch, remove orange and yellow wire from switch and connect them together to anode of a 1N4148 D2 and insulate
- Connect both cathodes to switch as shown
- Connect switch to LED as shown



## 2) Remove the original PLL circuit :

Principle of modification :

On the MC145106 the main divider is twice larger, by shifting inputs P0 to P8 upward and selecting FS to low (reference frequency change from 12.5kHz to 6.25kHz), the lower bit P0 will be the +12.5kHz shift input.



The original PLL circuit is the SM5104GA equivalent to MC145104 but both are obsolete !

Disassemble the PLL-Rx unit from the frame. Remove connectors, 5 screws

Using a hot gun remove the 100k resistor network. The remove the PLL and the 10 $\mu$ F capacitor.

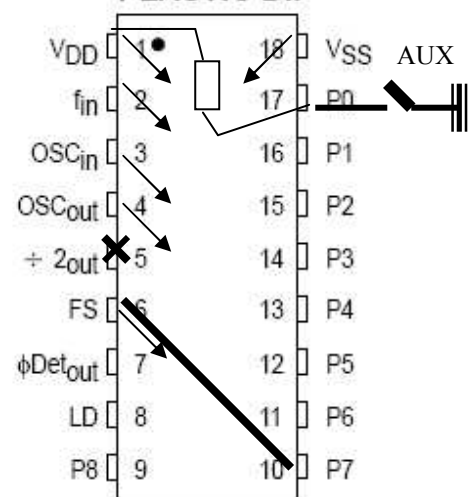
Before inserting the MC145106, due to longer package some pins need to be lifted up.

- Cut the pin 5 (2out) not used.
- Lift up pin 1 to 6 (VDD, Fin, Oscin, Oscout, FS), pin 18 (VSS) and 19 (P0)
- Connect pin 6 to pin 10, FS is low to get reference frequency twice lower.
- On pin 1 to 4 and pin 18 solder small single wire (rest of resistor connection) and bend them to be in face with the next hole (as shown on Fig. 1 and 2)
- Connect a 10k to 47k resistor (1206 SMD preferred) between pin 1 and pin 17.
- Insert the modified MC145106 on the board.
- Place a 10 to 22 $\mu$ F capacitor over circuit.

## PIN ASSIGNMENTS

MC145106

PLASTIC DIP



- Mount the 100k network resistor again at same place.
- Assemble the unit in the frame with connectors.
- Check the oscillation of the crystal with a scope on TP5, then tune TC6 to 12800.00 kHz with the frequency meter on TP5. The PLL is good !
- On pin 17 connect a wire to AUX switch to ground it when key is depressed.

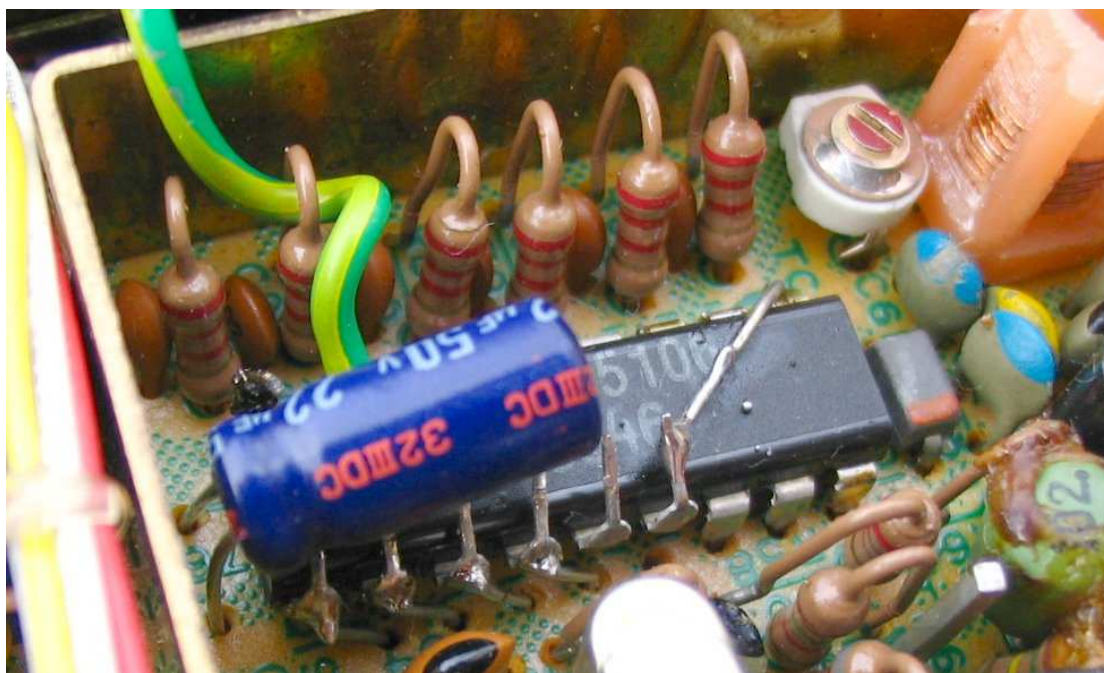


Fig 1 : side of MC145106 from pin 1 to 9



Fig 2 : side of MC145106 from pin 10 to 18

Have good contacts!

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