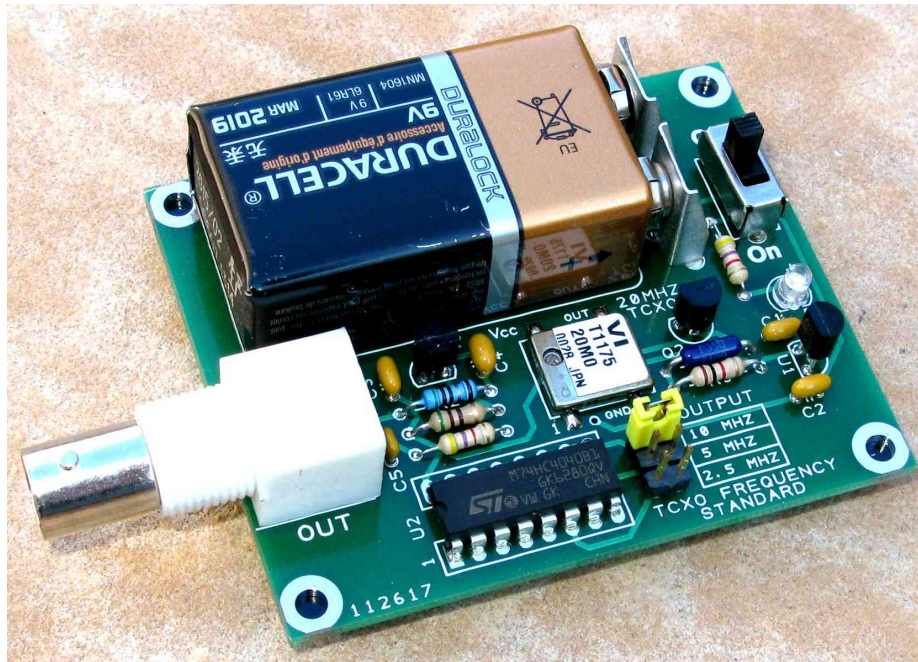


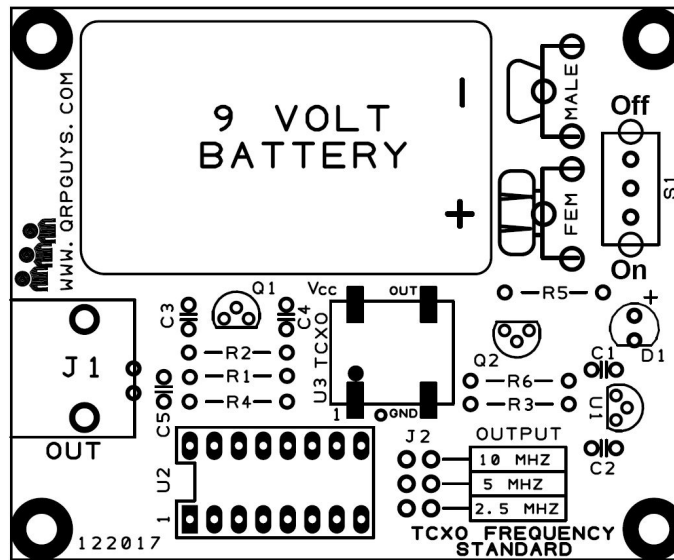
QRPGuys TCXO 10, 5, 2.5 MHz Frequency Standard Assembly Manual



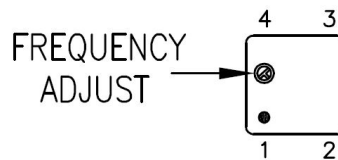
Parts List

- 1 – TCXO frequency standard pcb
- 2 - Q1, Q2, 2N3904 transistor
- 1 – U1, 74HC4040 DIP IC
- 1 – U2, 78L05, regulator
- 1 – U3, 20MHz TCXO
- 1 - D1, Green LED w/clear lens
- 1 – S.P.D.T. slide switch
- 1 – J1, horz. female BNC pcb connector
- 3 – C1, C2, C3, .1uF mono capacitor, marked 104
- 1 – C4, .001uF mono capacitor, marked 102
- 1 – C5 220pF mono capacitor, marked 221
- 1 – R1, 510 ohm resistor (green-brown-brown-gold)
- 1 – R2, 51 ohm resistor, (green-brown-black-gold)
- 1 – R3, 1K ohm resistor, (brown-black-red-gold)
- 1 – R4, 4.7K ohm resistor, (yellow-violet-red-gold)
- 1 – R5, 100k ohm resistor, (brown-black-yellow-gold)
- 1 – R6, 68K ohm resistor, (blue-gray-orange-gold)
- 1 – J2, 2x3 .10" C-C header
- 1 – .10" C-C jumper (berg connector)
- 1 – 16 pin DIP socket
- 1 – male pcb 9v battery clip
- 1 – female pcb 9v battery clip
- 4 – self adhesive rubber foot

We will assemble the smallest components first. All the components are installed on the front side of the board. Use the figure below as a guide for locations.

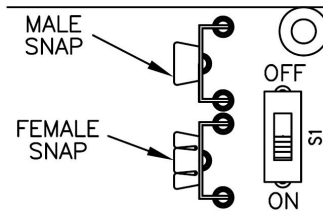


- [] Install U3, 20MHz TCXO, put a small drop of solder on pad #1 of the pcb, center the chip on the outline and solder that pad. Solder the remaining 3 pads.



- [] Install C1, C2, C3, .1uF mono capacitor, marked 104
- [] Install C4, .001uF mono capacitor, marked 102
- [] Install C5 220pF mono capacitor, marked 221
- [] Install R1, 510 ohm resistor (green-brown-brown-gold)
- [] Install R2, 51 ohm resistor, (green-brown-black-gold)
- [] Install R3, 1K ohm resistor, (brown-black-red-gold)
- [] Install R4, 4.7K ohm resistor, (yellow-violet-red-gold)
- [] Install R5, 100k ohm resistor, (brown-black-yellow-gold)
- [] Install R6, 68K ohm resistor, (blue-gray-orange-gold)
- [] Install Q1, Q2, 2N3904 transistor, *matching the outline on the board*
- [] Install U2, 78L05, 5V regulator, *matching the outline on the board.*
- [] Install D1, green LED w/clear lens, *the long lead is positive*

- [] Install 16 pin DIP socket
- [] Install the 2x3 header
- [] Install the S.P.D.T. slide switch
- [] Install the 9 volt battery clips noting the position of the male and female contacts as shown in the figure below. There is no reverse polarity protection diode, so installing these incorrectly will make the device not work and may result in circuit damage.



- [] Install the female BNC connectors flush with the board.
- [] Install the four self adhesive feet on the back side corners

This completes the assembly.

Operation

Power up the unit and let it stabilize for a few minutes. The TCXO is calibrated at the factory, and is rated at ± 2.5 PPM. However you can set the jumper for 10 MHz, check it against WWV at 10 MHz., and adjust the small trimmer on top of the TXCO case. Nighttime is the best reception. Listen for WWV and loosely couple the signal from the kit, so you hear both, and adjust the heterodyne beat to less than 1Hz/sec. Then you can now move the jumper to whichever frequency you want to use, 2.5 MHz, 5 MHz, or 10 MHz.

Schematic:

