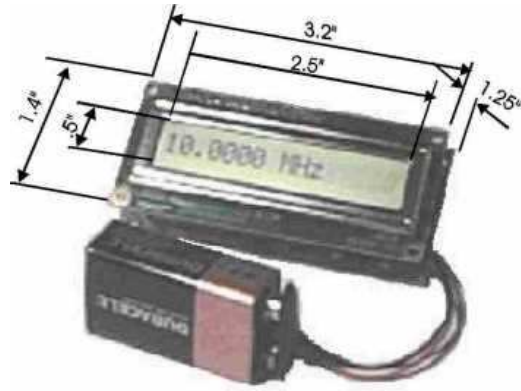



















Instructions for DFD1-SWAN



Digital Frequency Display 1

A miniature digital frequency counter designed to display the frequency of operation of SWAN radios

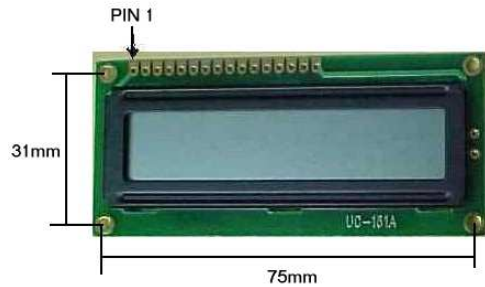
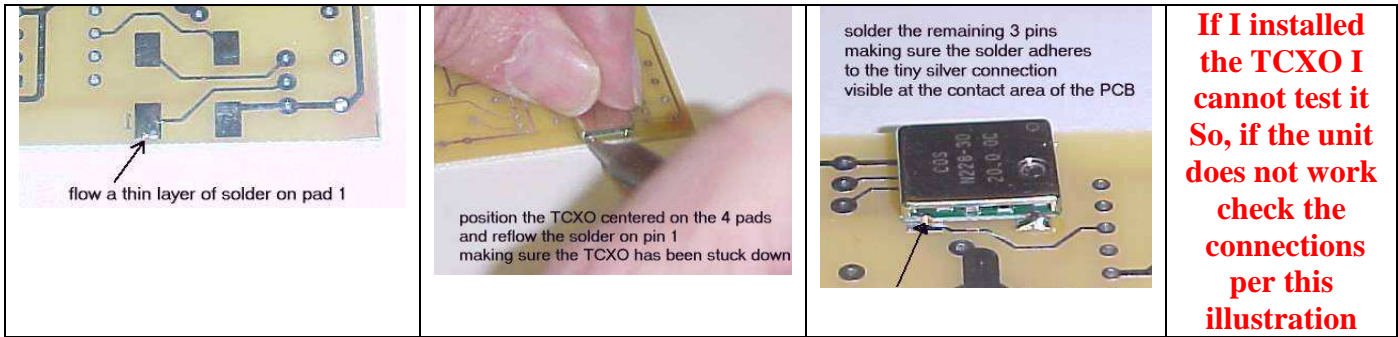
PARTS LIST

D1, D2	1N4148		U1	74HC4046	
R1, R8	100ohms Brown-black-brown		U2	PIC16C71 Labeled according To the model DFD1	
R2	390 ohms Orange-white-brown		U3	78L05 Voltage regulator	
R3,R4,R6	10K 15 turn trimpot		U4	20MHz TCXO	
R5	10K trimpot		H1	2 pin header 2 Pin jumper	
R7	10K ohms Brown-black-orange		J1	Female connector	
	25 Turn trimpot value may vary		P1	Male connector	
C1,C2,C3,C5	.1uF		C4	100 pF	
C8,C9	10uF				

DFD1 assembly instructions with built-in TCXO

Install the TCXO (if I have not already done that)

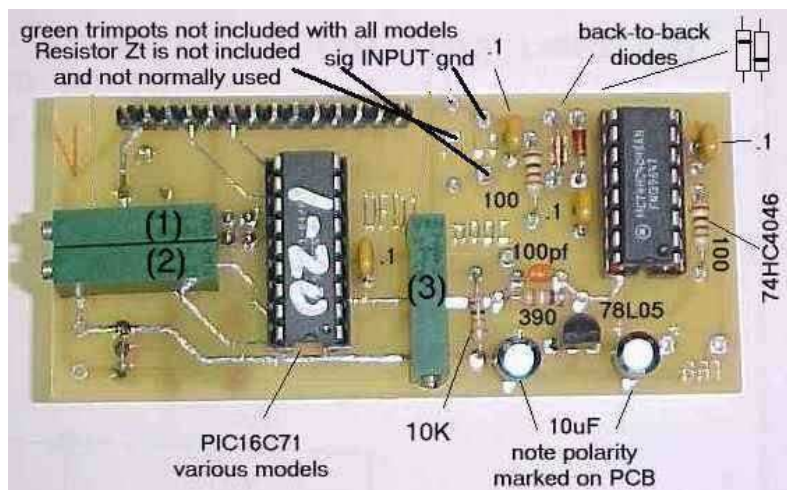
Pin 1 is a tiny dot in the corner of the device. It may have a screw driver adjust hole that is not used and not pin 1.



solder the female 14 pin connector in pins 1-14 of the display module



Solder only one pin then check to make sure connector is at right angle with display. Then solder remaining pins.

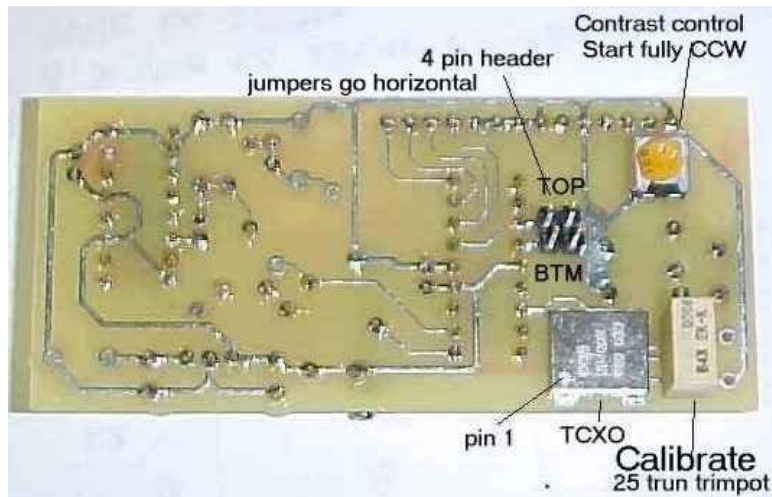


Install the parts as shown in the above and below illustration (trimpot 3 not included).

Resistor Zt is not included and not normally used.

Input signal goes to LO terminals, one ground, one signal.

If I pre-installed the TCXO, I could not test it. If unit displays only 8 black squares then check and reflow the solder on its four corners.



Reference TCXO Alignment procedure. (Done while the offset is set to zero)

A) connect the counter to a KNOWN frequency source and adjust the display to read that frequency.

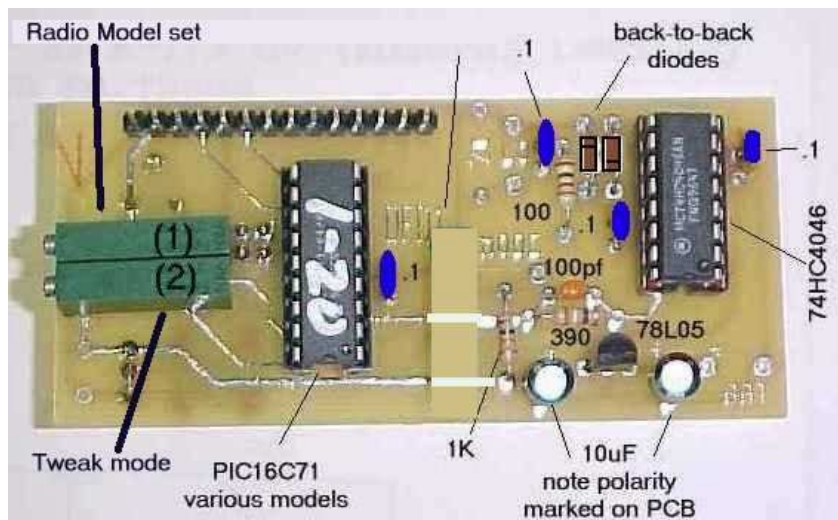
B) or zero beat the TCXO to 20MHz WWV.

C) or tune to KNOWN frequency and adjust TCXO to display that frequency.

There are pads on the PCB to install a termination resistor, Zt, if desired. Almost nobody does that.

INSTALLATION

Simply turn the **Radio Model Set** trimpot until the IF frequency (see chart below) of your radio is displayed. Then add one more turn in the same direction you were going when your IF was first displayed. There are about 4 turns per IF frequency.



The input frequency must be zero when setting the IF frequency. Remove the 74HC4046 chip to insure zero input frequency.

There is a two pin jumper on the back of the counter board. Jumper on enables TWEAK mode. Tweak mode allows adjusting the IF offset +/- 1.28KHz in 10 Hz steps to compensate for aging of the carrier crystals.

For those with a 5.1735MHz IF, the bottom jumper (this jumper is often replaced by a switch) decides 80 and 40 or 20, 15 and 10 meters

For the other models, with 5.5 MHz IF, the switch decides Normal or Reversed SSB to match the setting of the switch on the radio.

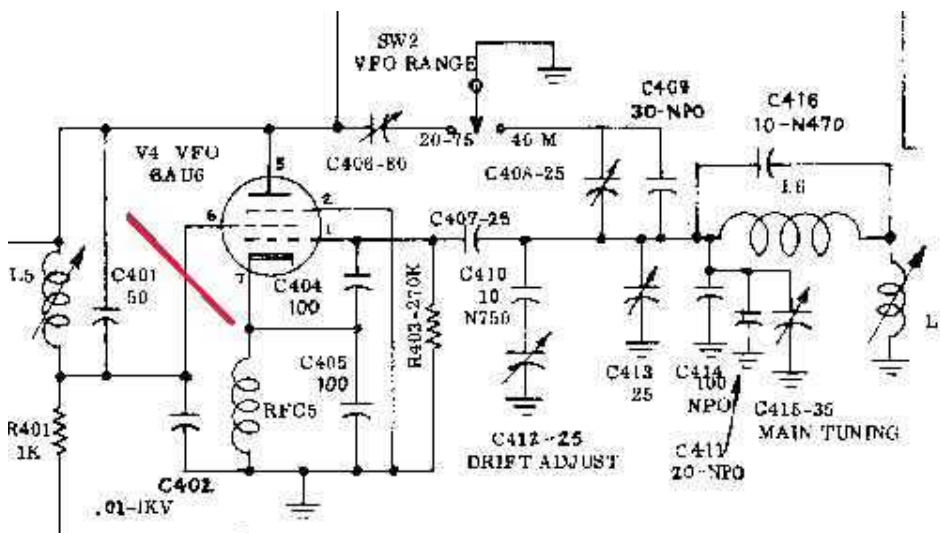
For the 250 and 250C the vfo reading is multiplied by 3 and added to the IF. The bottom jumper does nothing. Resolution is 100Hz instead of 10Hz.

240	IF=5.1728 MHz	350C	IF=5.5MHz
250	IF=10.698MHz	400	IF=5.1728 MHz
250C	IF=10.898MHz	500	IF=5.1728 MHz
260	IF=5.5MHz	500CX	IF=5.5MHz
270	IF=5.5MHz	600	IF=5.5MHz
270B	IF=5.5MHz	700CX	IF=5.5MHz
300B	IF=5.5MHz	700S	IF=5.5MHz
350	IF=5.1728 MHz	750CW	IF=5.5MHz

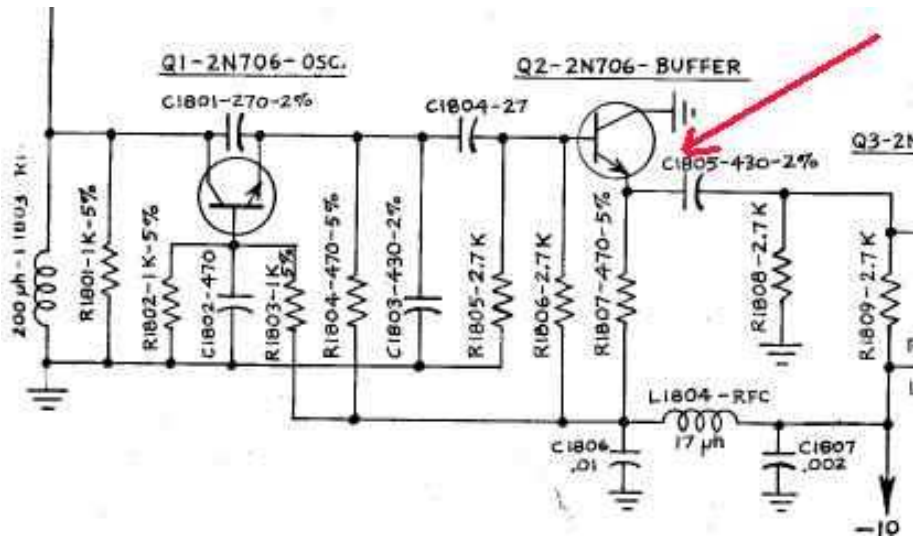
There is a contrast control on the back of the counter board (black/yellow trimpot). Set for best readability when viewed from the position unit is normally used in.

The displayed frequency is a combination an offset equal to the factory specified IF frequency shown above and the measured VFO frequency. **For maximum accuracy the BFO (Carrier) crystal, which determines the actual IF frequency of your radio, must be right on factory spec. Many models have a trimmer capacitor to adjust the frequency of those crystals. Consult you radio manual. OR use the tweak mode to obtain a displayed frequency that is equal to what you consider a KNOWN frequency. Net frequency etc.**

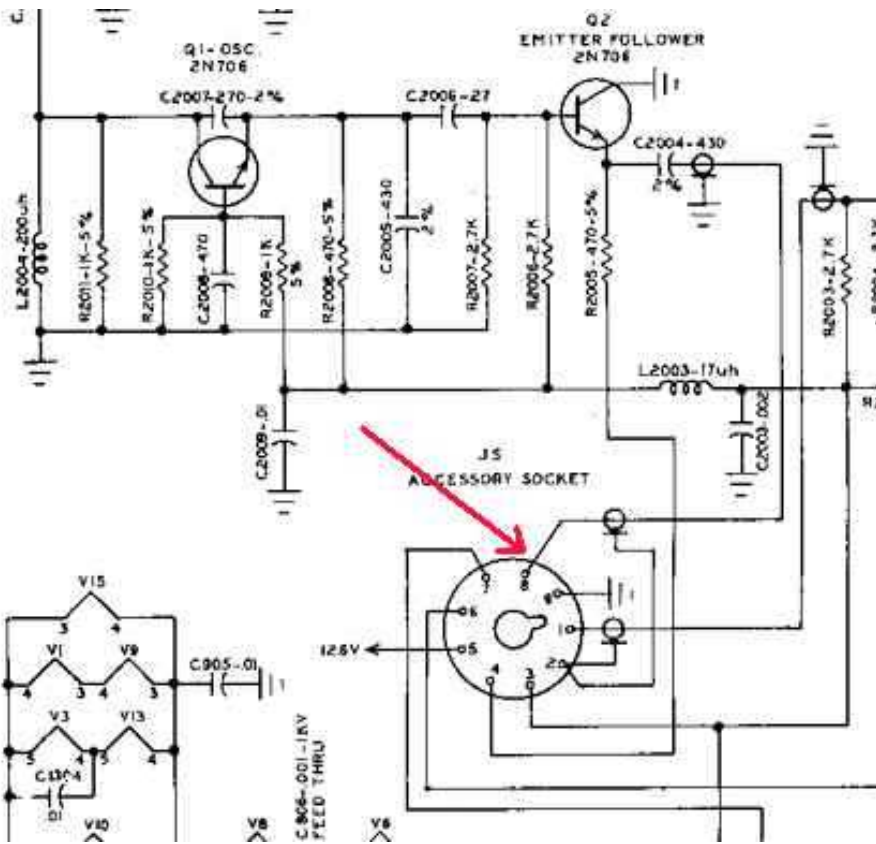
Where to get the VFO signal



240



250, 260, 350, 350C, 400



250C, 270, 270B, 300, 500, 500CX, 600, 700S, 700CX, 750CW

Power may be obtained from Pin 5, this power does NOT go on/off With the radio!