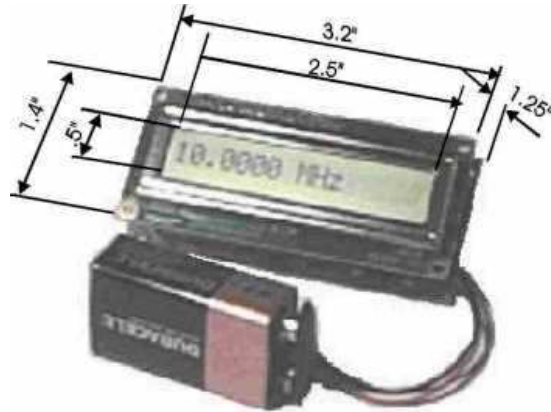


# Instructions for DFD1-Atlas



## DFD1-Atlas for the ATLAS 210/215

There are two jumpers on the counter board (like the little black two pin jumper plugs used in computers).

The bottom jumper selects either 5520 or 5645 KHz IF frequency to match your radio. (with no input signal the IF frequency is displayed)

The top jumper enables TWEAK MODE which allows you to adjust the IF frequency to exactly match the carrier crystals in your radio.

There are two 15 turn trim pots on the side of the counter board to adjust the tweak mode

The top trim pot adjusts the NORMAL IF frequency (5520 or 5645 KHz)

The bottom trim pot adjusts the REVERSE IF frequency (5523.3 or 5648.3 KHz)

Tweak can be made very accurate by temporarily connecting the DFD-Atlas to the output of the carrier oscillator ,PC-600 of the radio, and adjusting each tweak control to obtain a display of ZERO Hz. (0 Hz).

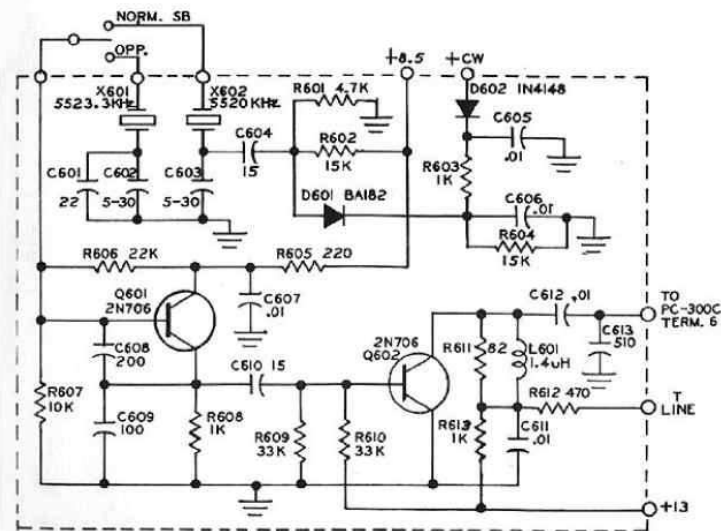













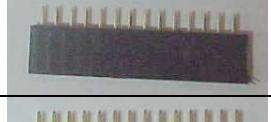


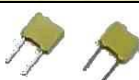


Figure 4-9. PC-600 Carrier Oscillator Schematic

Alternately, you can communicate with someone on each sideband and adjust tweak to the agreed upon carrier frequency (maybe a net controller)

C-Atlas is programmed for automatic band selection when the radio is operated in the amateur bands only. Display outside amateur bands may not be correct.

The mode, USB or LSB, is automatically displayed as a function of the band and NORMAL/REVERSE switch.

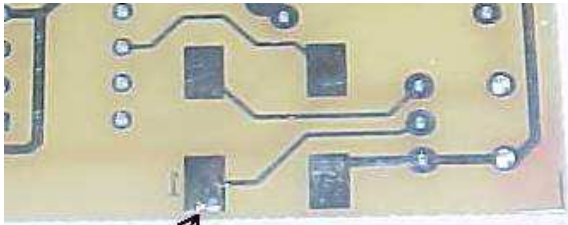
**PARTS LIST**

|             |                                   |   |        |                              |   |
|-------------|-----------------------------------|---|--------|------------------------------|---|
| D1, D2      | 1N4148                            |    | U1     | 74HC4046                     |    |
| R1, R8      | 100ohms<br>Brown-black-brown      |    | U2     | PIC16C71<br>Labeled Atlas    |    |
| R2          | 390 ohms<br>Orange-white-brown    |    | U3     | 78L05<br>Voltage regulator   |    |
| R3,R4       | 10K 15 turn trimpot               |    | U4     | 20MHz TCXO                   |    |
| R5          | 10K trimpot                       |   | H1, H2 | 2 pin header<br>2 Pin jumper |   |
| R7          | 10K ohms<br>Brown-black-orange    |  | J1     | Female connector             |  |
|             | 25 Turn trimpot<br>value may vary |  | P1     | Male connector               |  |
| C1,C2,C3,C5 | .1uF                              |  | C4     | 100 pF                       |  |
| C8,C9       | 10uF                              |  |        |                              |   |

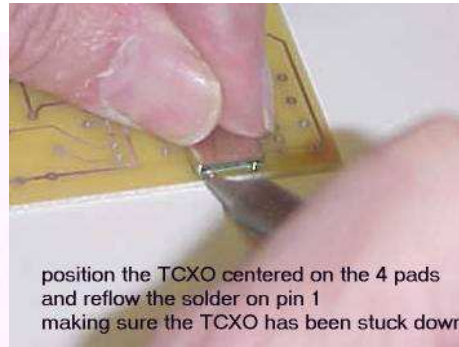
**DFD1 assembly instructions with built-in TCXO**

**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.**

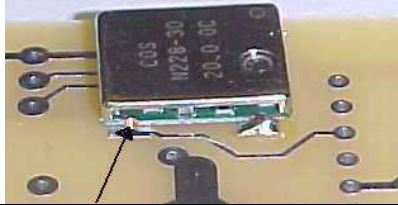


flow a thin layer of solder on pad 1

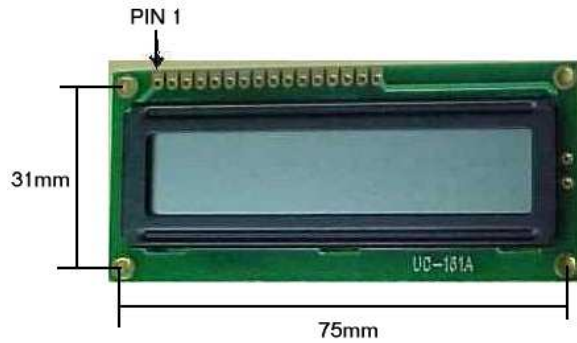


position the TCXO centered on the 4 pads and reflow the solder on pin 1 making sure the TCXO has been stuck down

solder the remaining 3 pins making sure the solder adheres to the tiny silver connection visible at the contact area of the PCB



**If I installed the TCXO I cannot test it  
So, if the unit does not work check the connections per this illustration**



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

If there are two rows of pads  
Use pins 1-14 for normal mounting

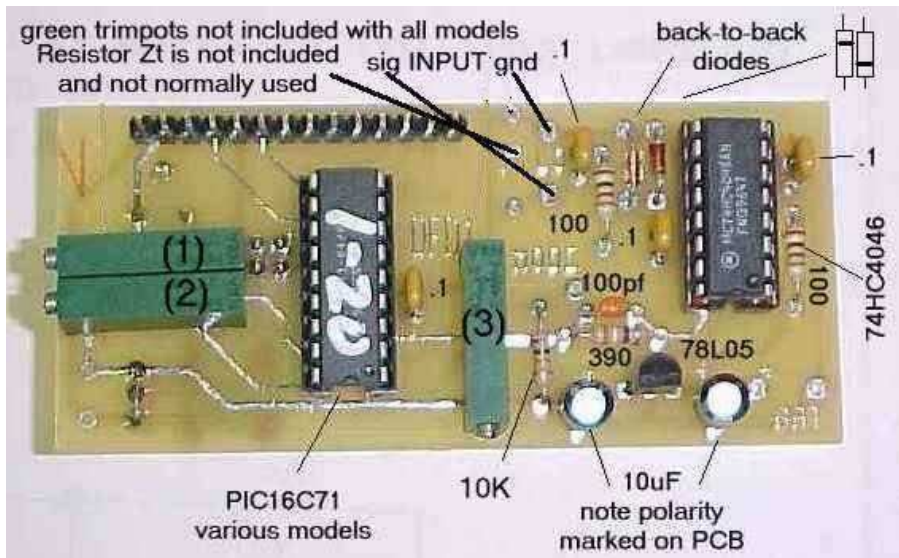


Use pins 17-30 for offset mounting  
hardly anyone will use this.



90 deg

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

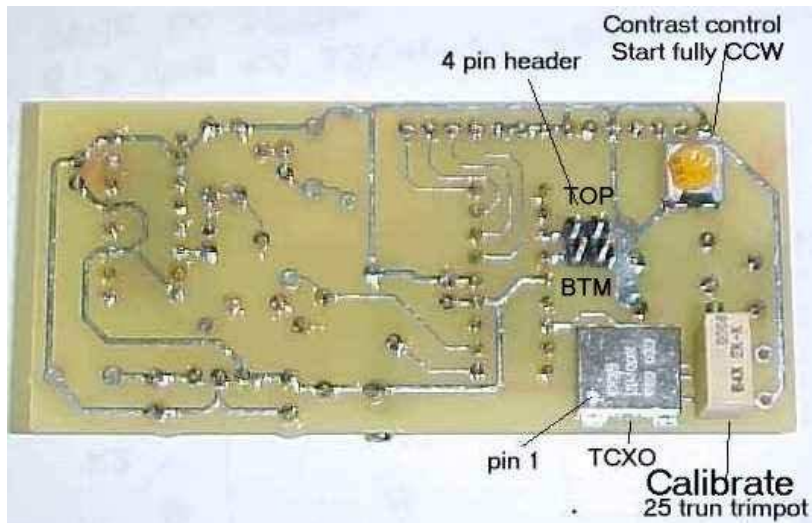


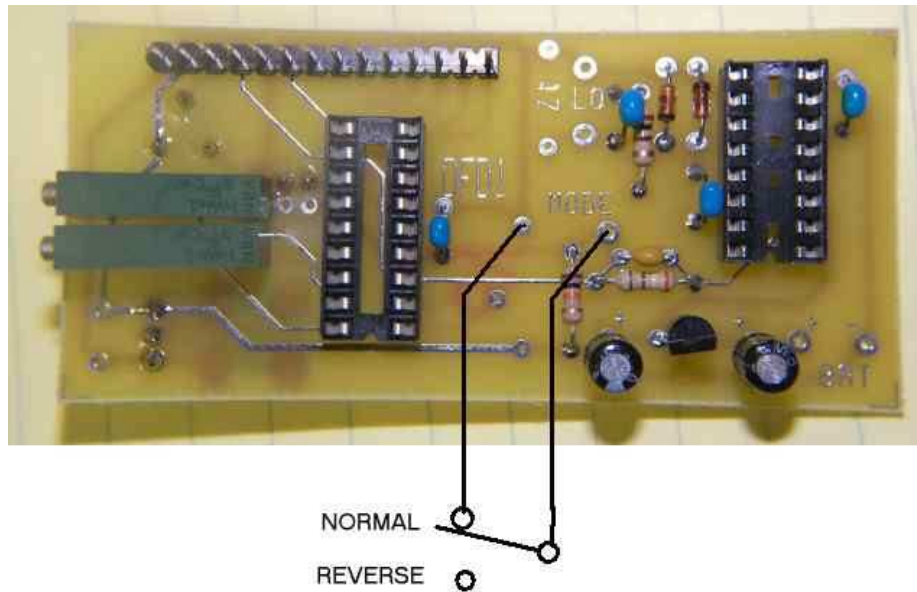
Install the parts as shown in the above and below illustration.  
 Resistor Zt (termination resistor) is not included and not normally used.

**Green trimpot (3) is not included or 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 re-flow the solder on its four corners.**





The Normal / Reverse function which duplicates the same function of the radio, is installed as shown above using a SPST or SPDT toggle switch.

### **Reference TCXO Alignment procedure**

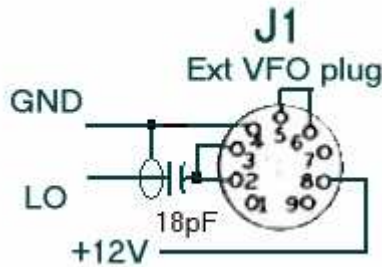
- A) connect the counter to a KNOWN frequency source and adjust the display to read that frequency.**
- or**
- B) zero beat the TCXO to 20MHz WWV.**
- or**
- C) tune to KNOWN frequency and adjust TCXO to display that frequency.**

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



The signal to the DFD1-Atlas is taken from Pins 2 and 3 of the external VFO input connector with gnd on pin 4. An 18pf capacitor couples VFO output to DFD using RG-174. leave the jumpers in place but tap the signals off the External VFO plug as shown below.

Leave the jumpers in place but tap the signals off the External VFO plug as shown below.



- 
- **Power is available from Pin 8**

```
***** IMPORTANT NOTICE *****

Due to the current requirements of the Atlas Digital
Dial all Atlas Transceivers of a serial number lower than
3950 will require the following modification:

(A) Remove the Transceiver Top Cover (2 screws each
side).

(B) Locate the EXT OSC SOCKET, the NEG GND BANANA
JACK and the TWO BANANA PLUGS on the back panel behind
the SPEAKER. Unsolder the RED WIRE from TERMINAL 8 of
the EXT OSC SOCKET. Cut and tape this lead to prevent
any short circuits!

(C) TEMPORARILY REMOVE the NEG GND BANANA JACK;
this will facilitate access to the BANANA PLUG directly
below the JACK.

(D) Connect a 3AMP FUZE, with insulating sleeving
from the UPPER BANANA PLUG to TERMINAL 8 of the EXT
OSC SOCKET. Use caution to avoid short circuits or the
disturbance of any other wiring.

(E) After careful inspection of your work REPLACE
the NEG GND BANANA JACK and its GND LUG. REPLACE TOP.

*****

Note: The change you have just made removes the 12VDC LOW
CURRENT line from the EXT OSC SOCKET and REPLACES it with FUZED
12VDC HIGH CURRENT to TERMINAL 8.
```

This power doe NOT go on / off with the radio but it is alright to leave the C-Atlas on at all times.

# ATLAS 210 Internal installation

Thanks to W4MCD,Rudy King, who is willing to provide details, [rudyking@msn.com](mailto:rudyking@msn.com) , really neat internal mounted DFD1A with backlit display option.



Atlas210 with Digital frequency Display



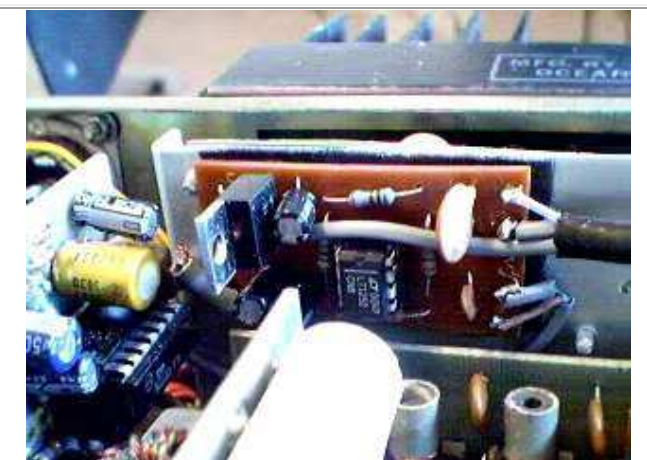
Atlas210 DFD on 10mtrs



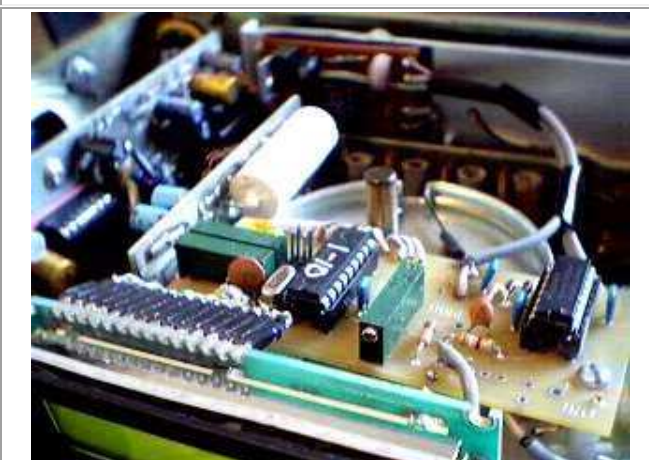
Atlas210 DFD view of installation from rear



Atlas210 Transceiver with DFD



Atlas210 preamp board installation



Atlas210 cover removed showing DFD installation