

# C-DFD1A Digital Dial for any single conversion radio.

Using the [universal interface](#), installation is almost plug-n-play.



**IF Offset is adjustable in steps of 10Hz from 0 -to 20.97MHz.**

**It can be adjusted to within 10Hz of the actual IF frequency which may be slightly off due to alignment or crystal aging.**

**A switch on the back selects add/subtract offset, to match the injection side of the radio, even if different from band to band. IF the frequency appears off by twice the IF then this switch is in the wrong position.**

**It can be used with any of the following Hallicrafters, Hammarlund or National radios, as well as other single conversion radios. (fixed frequency second conversions are OK as they do not effect the calculation of received frequency).**

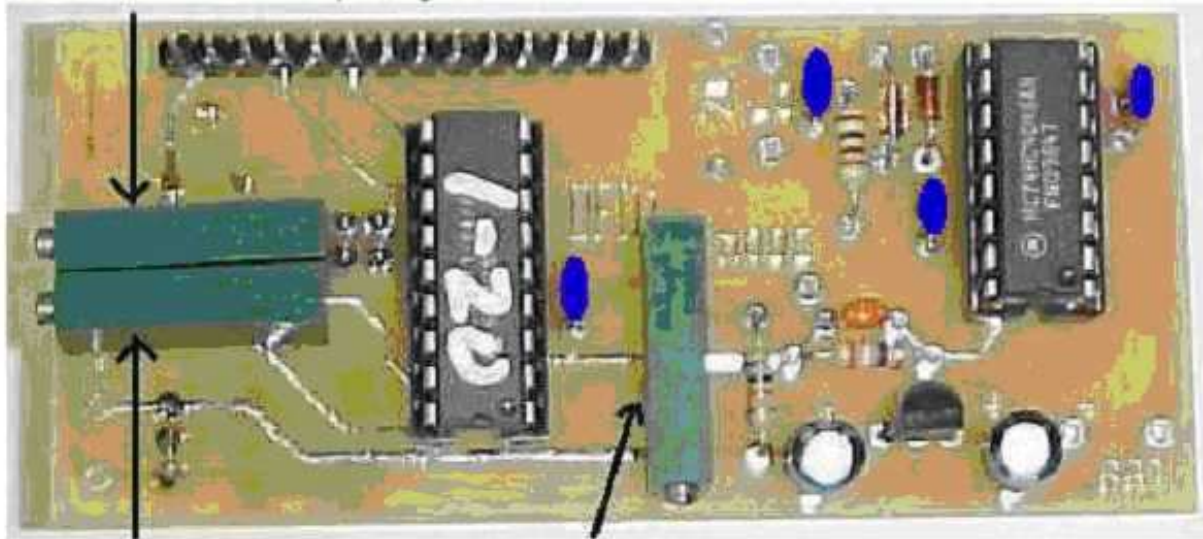
Model	IF offset	Model	IF offset	Model	IF offset	Model	IF offset
S-20R	455KHz	SX-25	455KHz	HQ-100	455KHz	HRO-50	455KHz
S-22R	465KHz	SX-28	455KHz	HQ-105	455KHz	NC-2-40	455KHz
S-38	455KHz	SX-42	455KHz	HQ-110	455KHz	NC-33	456KHz
S-40	455KHz	SX-43	455KHz	HQ-120	455KHz	NC-46	455KHz
S-41	455KHz	SX-62	455KHz	HQ-129X	455KHz	NC-57	455KHz
S-47	455KHz	SX-96	1650KHz	HQ-140	455KHz	NC-60	455KHz
S-51	455KHz	SX-99	1650KHz	HQ-150	455KHz	NC-88	455KHz
S-52	455KHz	SX-100	1650KHz	HQ-200	455KHz	NC-98	455KHz
S-53A	455KHz	SX-110	455KHz	SP-200	455KHz	NC-105	455KHz
S-76	1650KHz	SX-101	1650KHz	SP-210	455KHz	NC-173	455KHz
S-85	455KHz	SX-111	1650KHz	SP-400	455KHz	NC-183	455KHz
S-107	455KHz	SX-122	1650KHz			NC-188	455KHz
S-108	455KHz	SX-130	1650KHz			SW-54	455KHz
S-118	455KHz	SX-133	1650KHz				
S-119	455KHz	SX-140	1650KHz				
S-120	455KHz						
S-129	1650KHz						
S-200	455KHz						
S-210	455KHz						

**IMPORTANT: POWER SOURCE SHOULD BE OFF BEFORE CONNECTING TO DIGITAL DISPLAY OR IT COULD BE SHORTED**

Setting the offset using the three green 15 turn trimpots.

## Trimpot functions

DFD1A/B - Medium



DFD1A/B - Coarse

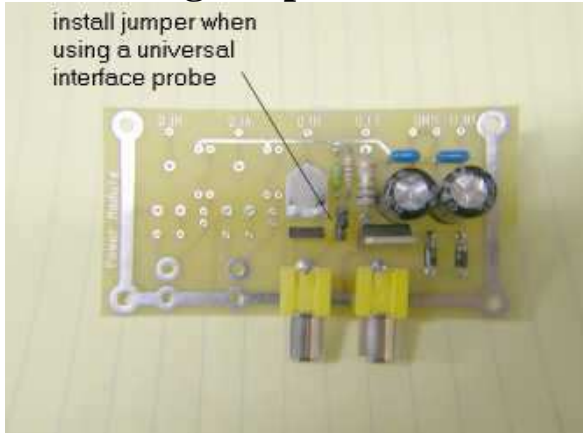
DFD1A/B - Fine

Set all fully CCW to obtain zero frequency with 74HC4046 removed  
set coarse to one step less than desired offset  
set medium to one step less than desired offset  
set fine to desired offset

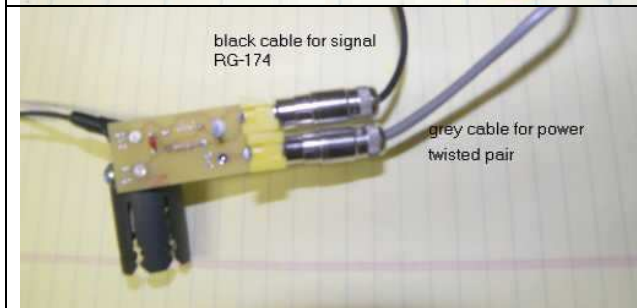


## Using the universal interface probe

### When using the probe with a C-DFD1A



The probe has three connections, power, ground and signal



The probe has two RCA jacks that interface to the DFD or digital dial, Power and signal.

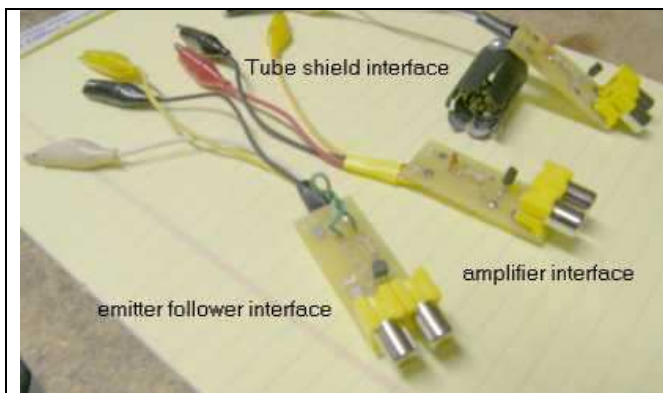
**Power** ( use grey cable supplied with digital dials) is 9 to 18 VDC for a DFD or 9 to 18 VDC or 6.3 to 12.6 VAC for a digital dial.

(recommend connecting to hot side of pilot light socket.)

**Use of the power connection is optional. It does not power the probe.**

**It is intended to tap power from the radio for the C-DFD1A.**

**Signal** (use black cable supplied with digital dials) is the oscillator signal to DFD or digital dial.



It can be built on three versions

- 1) emitter follower interface
- 2) amplifier interface
- 3) tube shield interface

## The emitter follower interface

has no gain but a high input impedance and low input capacitance.

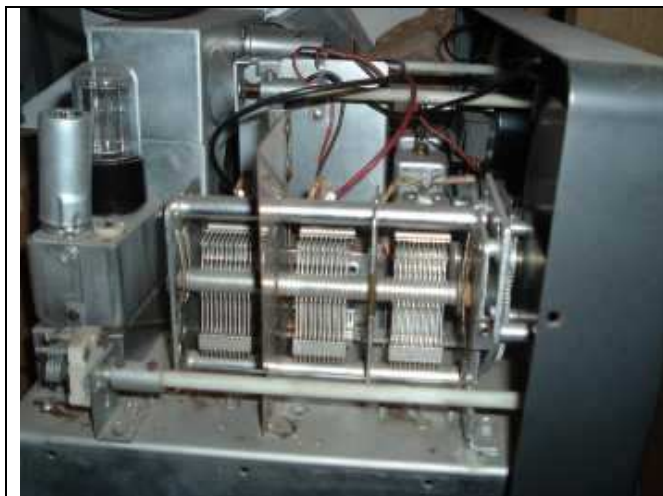
It is used to connect to the tuning gang of any radio, as shown below.

The intent of this interface is minimum loading on the radio and isolation of the coax cable leading to the digital dial.

The tuning gang interface works with most older vacuum tube radios.

The tuning gang is the large air variable capacitors used for bandset and/or bandspread tuning.

The connection is made to the section of the tuning gang that controls the local oscillator.



This is the tuning gang of my SX-100

A GIMMICK makes a very small (<1pF) capacitor so detuning of the local oscillator is trivial and the emitter follower isolates the coax cable..

The tuning gang fixed plates (stator) is usually the signal and the moving plates (rotor) is ground.

Connect the SIGNAL lead to the stator and the GND lead to the rotor or chassis.

It takes about 15V p-p to use this interface up to 32MHz, fairly easy for a vacuum tube radio.

The emitter follower version can be used to make direct connection to solid state radios.

Replace the gimmick with a small capacitor for increased sensitivity.

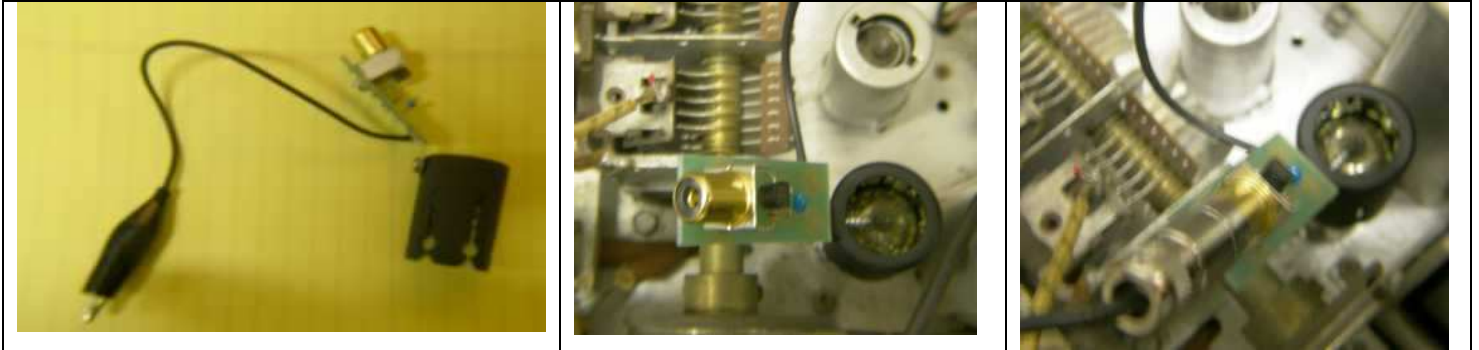
capacitor	signal@32MHz
2.2pF	15 Vp-p
4.7pF	7 Vp-p
10pF	3.5 Vp-p
15pF	2 Vp-p
20pF	1.8 Vp-p
24pF	1.5 Vp-p
30pF	1.25V p-p

# The tube shield interface

works with most vacuum tube radios.

The signal connection is a tube shield which you simply slide over the oscillator tube.

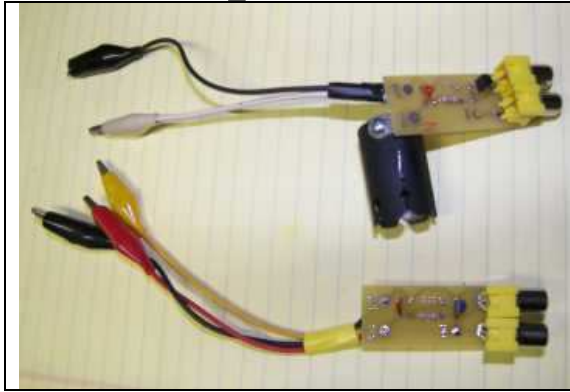
The tube shield should not touch metal, only the glass of the tube.



The tube shield attaches to the signal point on the probe. It has a ground connection alligator clip.

Simply slide the tube shield over the oscillator tube and connect the ground to a nearby chassis ground.

# The amplifier interface



has a gain of 4 but has a lower input impedance. It is used for the tube shield interface and for direct connection to solid state oscillators or the cathode of vacuum tube oscillators

Typically an RCA jack is installed in the receiver and an RG174 coax cable with RCA plugs at both ends is used to connect the radio to the DFD.



For the tube shield interface.

**Remove the silver lining inside the shield if for a 9 pin tube.**



Using the supplied solder lug and screw, solder the tube shield to the signal pad on the probe.

Additional information is available at

<http://www.aade.com/applications2/app2.html>