

A universal probe interface.

Signal pickup probe for DFD's and Digital Dials

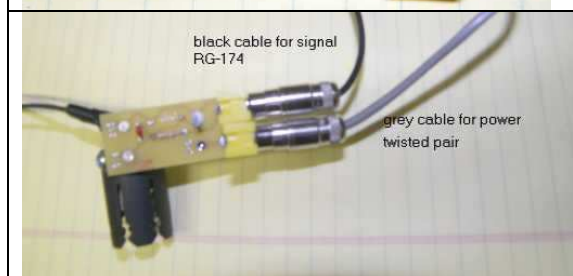
Makes almost any installation plug-n-play

\$5.00 each.

Postage \$2.50 for 1 to 3 probes.



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.

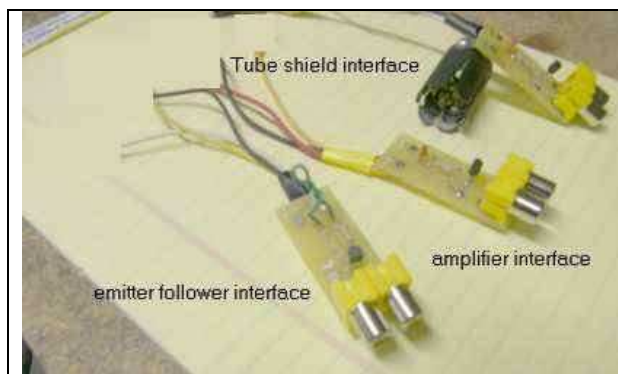
Power (use grey cable supplied with digital dials) is 9 to 18 VDC for a DFD or 9 to 18 VDC or 6.3 to 12.6 VAC for a digital dial.

Use of the power connection is optional. It does not power the probe. It is intended to tap power from the radio for a digital dial.

I do not supply wires.

Don't know how long you will need them to be.

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



It can be built one 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 (two short wires twisted together) 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.

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 (Using the amplifier interface below.)

works with most vacuum tube radios.

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

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

It has a silver lining inside.

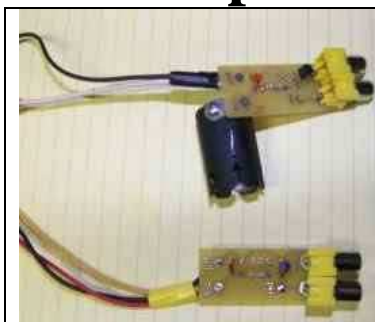
Leave in for 7 pin tubes

Remove for 9 pin tubes



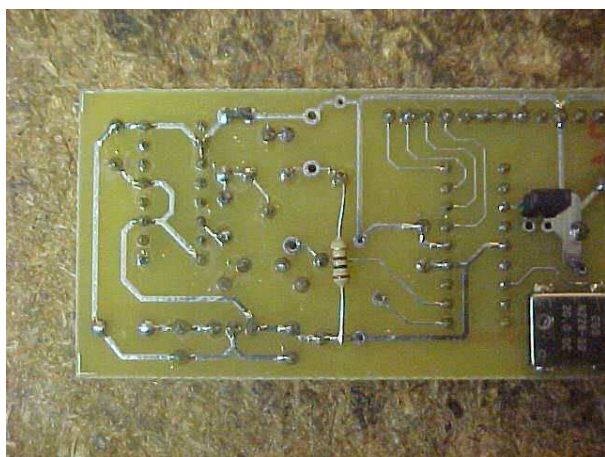
The tube shield attaches to the signal point on the probe. It must have a ground connection. Simply slide the tube shield over the oscillator tube and connect the ground to a nearby chassis ground.

The amplifier interface



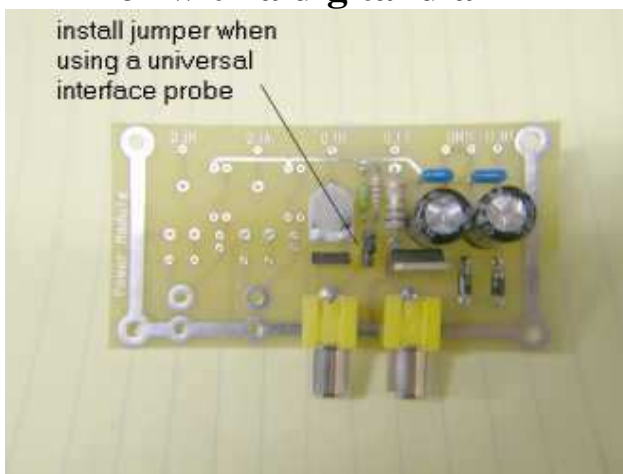
has a gain of 4 but has a lower input impedance. It is used for the tube shield interface and for direct connection to solid state oscillators or the cathode of vacuum tube oscillators

When using the probe with a DFD



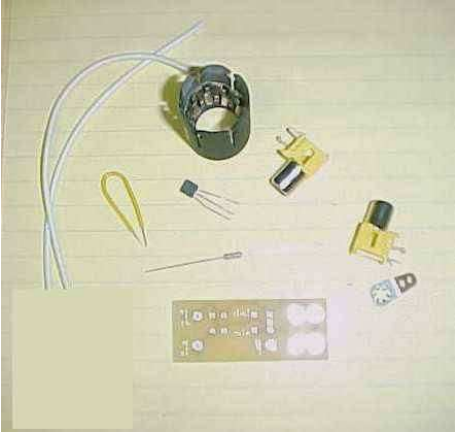
Solder a 100 ohm $\frac{1}{4}$ W resistor from the input to +5V as shown above.

or with a digital dial



install the jumper on the power module board (there may be one to three jumpers.)

Universal signal probe kit



Decide on the interface you want to use.

Either tuning gang, solid state radio or tube shield.

Emitter follower configuration

used for tuning gang or solid state radio

The emitter follower configuration uses a PNP transistor, 2N3906, or 2N4403



**Solder the PNP transistor with flat side toward large holes for the RCA jacks.
Solder the 36K resistor between the pads with PNP written between them**

Amplifier configuration

Used for tube shield or solid state radio

The amplifier configuration uses a NPN transistor, 2N3904, or 2N4401



**Solder the NPN transistor with flat side away from the large holes for the RCA jacks.
Solder the 36K resistor between the pads with NPN written between them**

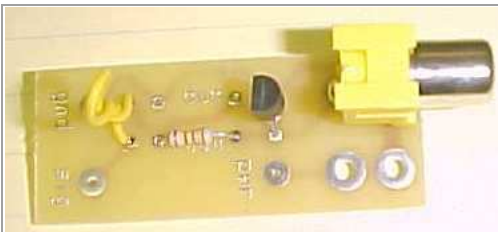
For both configurations



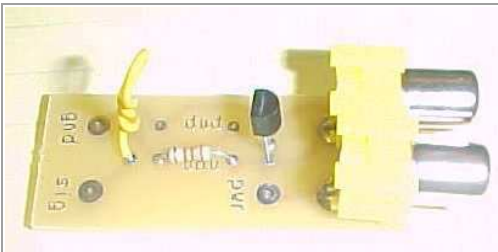
solder the loop of wire across the two pads shown. A small value capacitor may also be used. I use .01uF for a tube shield interface.



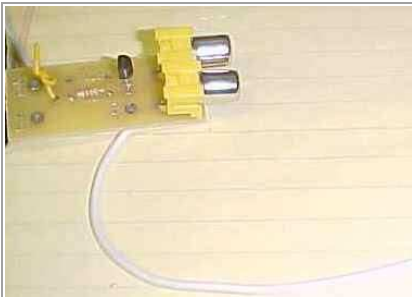
Twist the loop a couple turns.



Solder an RCA jack in the signal position.



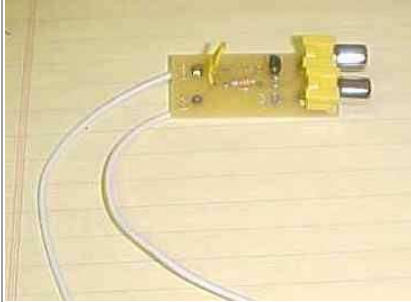
**If desired
Solder an RCA jack in the power position.**



**Solder a lead to the pwr pad on the pcb.
Long enough to reach your power source,
typically the pilot light socket of your radio.**



Solder a lead to the gnd pad. Long enough to reach a point on the chassis of the radio



**For the tuning gang or solid state radio solder a lead to the signal pad.
For the tube shield interface see below.**



For the tuning gang connection (emitter follower version) clip the top off the loop. This forms a very small capacitor.



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



**For the tube shield interface:
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>**