

Pocket Tracker Frequency Agile (FA) Assembly Addendum

Introduction

Thank you for purchasing the Pocket Tracker Frequency Agile option. This option was developed to meet the requirements of Pocket Tracker owners that want the ability to re-program their own transmitting frequencies and to support experimenters and other users that simply want to do more with the Pocket Tracker hardware platform.

These assembly instructions are intended to be used as an addendum to the original illustrated Pocket Tracker Assembly Instructions. This addendum will be integrated into the Pocket Tracker Assembly Instructions if customer demand warrants the effort.

Here is a list of the additional parts included in a Frequency Agile Pocket Tracker kit:

- J14, Serial Port connector, 3/32" (2.5 mm), 3 conductors
- R33, 10 k ohm through-hole resistor
- D10, 1N4148 diode
- 26 gauge black wire, 2.5 inches
- 26 gauge yellow wire, 2 inches
- 26 gauge blue wire, 2 inches

There are four documents associated with the Frequency Agile modification. You should familiarize yourself with these documents before you start construction of your Pocket Tracker.

- 1) Pocket Tracker Frequency Agile (FA) Assembly Addendum (this document)
- 2) Pocket Tracker Frequency Agile (FA) Configuration Instructions
- 3) PT-FA Schematic.jpg – a modified Pocket Tracker schematic
- 4) PT-FA Loading Details.jpg – A picture of the U6 and J14 area of a completed Frequency Agile Pocket Tracker.

High Level Pocket Tracker-FA Assembly Instructions

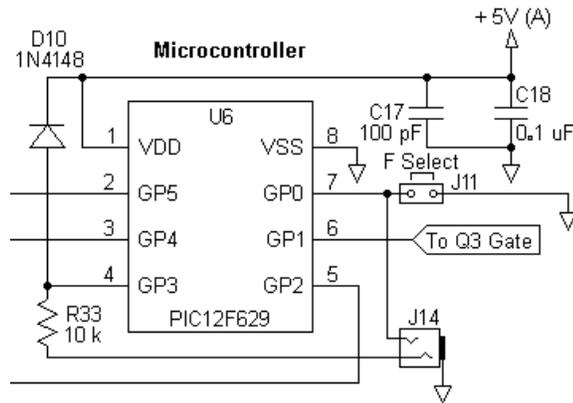
While there are a lot of words below describing the Pocket Tracker FA modification the goal is actually quite simple: add a connector (J14), a diode (D10), and a resistor (R33). These parts will:

- 1) Provide a method to connect the transmitter PIC (U6) to a PC. The instructions below assume a second 3/32 inch stereo jack (J14) will be installed and wired in a way that allows the same Programming cable (or GPS Adapter cable with null modem adapter) to be used for TinyTrak3 chip and Frequency Agile configuration.

You may want to use a different method to connect to a PC depending on your application. Data flows from pin 6 of U6 to the PC (usually on pin 2 of a DB-9). Data flows from the PC (usually on pin 3 of a DB9) to U6 pin 4. The PC and Pocket Tracker grounds are connected via pin 5 of the PC's DB9 Serial Port.

- 2) Add a clamping diode (D10) and current limiting resistor (R33) to ensure a safe and reliable connection between the PC's Serial Port and the transmitter PIC (U6) in the Pocket Tracker. Pin 4 of U6 does not have an internal clamping diode so clamping diode D10 will be added. Pin 6 of U6 has an internal clamping diode. Since pin 6 of U6 is configured as an output while communicating with the PC, no current limiting resistor is needed on pin 6.

This section of the Pocket Tracker schematic shows the connections for the additional components used in a Frequency Agile Pocket Tracker (D10, R33, and J14):



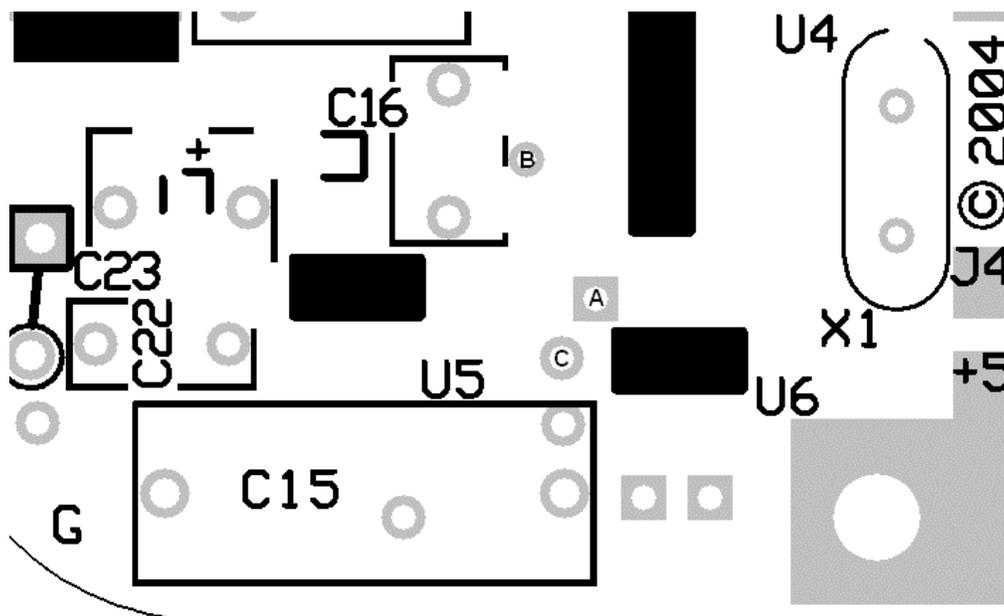
Detailed Changes to the Pocket Tracker Assembly Instructions

D10 is a small glass axial leaded diode. The anode lead of D10 (the lead opposite the striped end of the diode) will be folded with two 90 degree bends to form a squared-off inverted “U” with the component body in one of the vertical uprights of the “U”. The exact center-to-center lead spacing is 0.127”, but just forming the part to fit the board is acceptable.



Refer to the illustrated Pocket Tracker Assembly Instructions. In the middle of the second page there is a paragraph that describes how to install the long white backside wire. One end of this wire is soldered in a pad near U6 (outside the C15 rectangle). The cathode end (striped end) of D10 will be installed in this same pad. It might be best to solder the anode end of D10 in place, and then install the U6 end of the long white backside wire in the same pad as the cathode lead for D10. After the cathode of D10 and one end of the long white backside wire are inserted in the same hole, both the cathode lead of D10 (striped end) and the U6 end of the long white backside wire can both be soldered in place at the same time. On the bottom of the board the pad that the long white backside wire and the cathode lead of D10 get soldered into looks like a circle in a square and has a long silver dashed line leading to it which indicates the routing path for the long white backside wire.

The figure below is a simplified drawing showing a portion of the Pocket Tracker board.



There are three plated through holes with pads all lined up in a column at the corner of the C15 outline near U6. Two of these pads are inside the C15 outline. The third pad (the top one) is just outside the C15 outline. The body of D10 will be installed directly over this third pad (labeled “C” in the figure above) that is just outside the outline for C15. The “C” pad is just below and to the left of the “A” pad.

The anode end of D10 (the end opposite the stripe, the long wire end once D10 is formed and cut as show in the drawing) is soldered in the pad connected to pin 4 of U6. This pad, near the center of the simplified loading diagram above, is marked “A”.

R33 – one end of R33 is formed into a “J” hook and soldered to the highest point of the anode lead (the wire loop end) of D10. The body of R33 should be oriented parallel to the surface of the board. A piece of blue 26 gauge wire is soldered to the other end of R33. The other end of this blue wire is soldered to the “ring” terminal of **J14**. The ring terminal is the “center” terminal, the one closest to the sleeve (threaded) terminal. Carefully position R33 so that the solder joint between R33 and the blue wire does not contact the case of the crystal (X1).

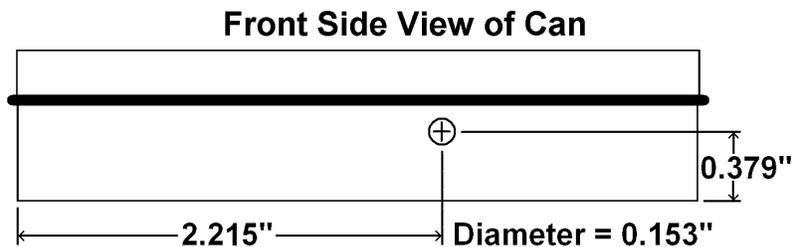
A Frequency Agile Pocket Tracker board is supplied with two wires soldered to U6 pin 7. A blue wire on the back of the board will be routed to the J11 FS pad, just as it is in a standard Pocket Tracker. A yellow wire will be installed in the same pad (wired with a trace to U6 pin 7) on the top of the board. This wire will be connected to the tip (outside, non-grounded) terminal on the second 3/32” stereo jack (**J14**).

A piece of black 26 gauge wire is soldered to the “sleeve” terminal of **J14**. This terminal is connected to the threaded portion of J14. The other end of this black wire will be soldered in the pad marked “B” in the simplified loading diagram. This grounding pad is located between U4 pin 14 and C16. For best performance the three wires attached to J14 should be twisted together along most of their length. Allow the wires to diverge on both ends only as needed.

J14 Mounting Details

Refer to the Pocket Tracker Case Feature Dimensions drawing. The hinge side view of the can shows a 0.153” diameter hole 0.379” up from the base of the can, and 2.325” from the “antenna” end of the can. J14 will mount in a similar location, but on the opposite wall. The vertical dimension will be the same: 0.379 inches. J14 will be offset a little bit horizontally to ensure adequate clearance for pin header J11 and wire loop W1.

Drilling the 0.153” diameter hole for J14 up 0.379” from the base of the can, and over 2.215” from the “antenna” end of the can, will center the terminals of J14 between pin header J11 and wire loop W1.



End of Addendum