



Byonics TinyTrak3 GPS Position Encoder

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TinyTrak3 (TT3) packs many features in a tiny footprint ($2\frac{1}{4} \times 1\frac{5}{8} \times \frac{3}{4}$ inches). Developed by Byon Garrabrant, N6BG, the TT3 allows you to interconnect a global positioning system receiver to a transceiver for transmitting your position as calculated by the GPS. TT3 massages the position data received from the GPS and puts it into a packet format. When transmitted and received, the data can be properly decoded to indicate your position, for instance on a map displayed by a computer running APRS (Automatic Position Reporting System) software in another ham shack.

The TT3, GPS and radio equipment combination makes up a “system” commonly referred to as a “tracker” in APRS parlance. Trackers are typically installed in vehicles that are critical in various operations like emergency and public service scenarios so that the current position of the vehicle is available to those in the operation who need to know.

The advantage of TT3 is that it eliminates a TNC (terminal node controller) that normally performs the massaging and packet building function. Unlike a TNC, TT3 does not decode received packets; it only transmits packets.

Building and Installation

I built the kit and it was a simple and quick task. With the assistance of the kit’s excellent set of instructions, anyone who knows the business end of soldering iron should be able to build the kit in an hour or less. The builder needs to make only two decisions during kit construction: (1) whether to trim the PC board so that its connectors have a lower profile when installed in the optional case and (2) whether to install resistor R8, which is not needed if TT3 will be used with a transceiver that does not key its transmitter via current through the microphone line. By the way, if you decide to trim the PC board for a lower profile, you should trim before you begin populating the board with components.

After you build the board, you connect it to the serial port of your computer and configure it using *TinyTrak3Config.exe*, a Windows application you download from the manufacturer’s Web site (www.byonics.com) in a ZIPed file that also contains a .pdf version of TT3’s documentation. A Mac OS TT3 configuration application is downloadable from mdco.net/irving/tinytrak.html.

Configuring TT3 is straightforward if you are familiar with configuring an APRS station. If in doubt, just configure your call sign and use the default settings of the other parameters.

By the way, you can configure TT3 with two different configurations (“Primary” and “Secondary”) and (1) select the desired configuration with switch SW1 or (2) configure TT3 to alternate call sign and digi path from one transmission to the next (by enabling the Alternate Digi Paths parameter).

Time Slotting, Power Switch and SmartBeaconing are three features of the TT3 that merit full descriptions.

Time Slotting allows you to preset the transmission times of multiple trackers. Each tracker can be configured to transmit at a different specified time to avoid two trackers transmitting at the same time, which results in the receiving station being unable to receive one or both of the tracker’s transmissions.

When enabled, the Power Switch feature turns on the GPS and transceiver at a user-specified time, sends a position packet, then turns off the GPS and transceiver. This option can be configured to wait until a second transmission is completed before powering off the equipment in case the first transmission does not contain a valid position packet due to the GPS not being locked on to the GPS satellites. The Power Switch feature

requires the addition of a relay to toggle power on and off when commanded by TT3. The relay must be able to handle the power requirements of the transceiver and GPS.

SmartBeaconing is my favorite feature and as far as I’m concerned, worth the price of admission. When enabled, SmartBeaconing varies the rate of transmission depending on changes in the speed and heading of the tracker. For example, as the tracker increases speed, the TT3 increases the transmit rate. Without this option, the transmission rate would remain the same as the tracker goes

faster, resulting in widening gaps and less accurate position information on the maps of APRS stations receiving the tracks of the tracker. For additional position accuracy, SmartBeaconing also uses CornerPegging, which forces a new position packet transmission each time the tracker turns a corner.

TT3 uses a female DB-9 for the connections to the transceiver (audio in and out, ground and PTT, if needed) and a male DB-9 connector for the connections to the GPS (data from the GPS and ground). You also use the male DB-9 to connect TT3 to your computer during configuration.

For this review, my APRS station at home monitored the TT3 using street-level maps. It was refreshing to see my tracker turn each corner on the map instead of occasionally cutting across the virtual lawns, which typically occurs with my normal APRS mobile station that is without the CornerPegging feature.

Manufacturer: Byonics, 8378 Granite Mountain Ln, Las Vegas, NV 89129; www.byonics.com. TT3 kit \$30; TT3 kit and case \$36; TT3 board built and tested \$54; TT3 built and tested with case \$60.

