



PocketPacket

Usage guide

Using PocketPacket is very easy, especially if you are already familiar with some other APRS* software. However, if you are new to APRS, or do not understand some settings, please take a moment to read this guide, which will walk you through all available screens and options. If just interested on how to connect your iPhone/iPod Touch/iPad with your transceiver, take a look at the *Interfacing details* chapter at the end.

I hope you enjoy this application as much as I did creating it.

73 de SW1OAN

*APRS© is a registered trademark of Bob Bruninga (WB4APR).

Detailed description

PocketPacket is an APRS client for iPhone/iPod Touch/iPad devices. The "Automatic Position Reporting System" is a packet communications protocol used by amateur radio operators (hams) around the world. APRS packets may report position, status, station capabilities, weather or other information in real time. They can also be used for broadcasting announcements or one-to-one messaging. Position packets include a visual description of the referenced object, by means of a specific symbol/icon that should be placed on a map. PocketPacket implements most of the APRS Specification, according to *APRS Protocol Version 1.0, Addendum 1.1 and Proposal 1.2* (<http://www.aprs.org>).

APRS data is sent over the air using AX.25 protocol frames. PocketPacket incorporates a software-based TNC, allowing you to directly capture and visualize, or encode and transmit 1200 baud packets (AFSK modulation) using a VHF radio transceiver. With PocketPacket you can also send and receive packets via the global APRS-IS network (APRS Internet Service), which forwards APRS data over the Internet.

Incoming data is presented on a map, as most packets define some object, with a specific symbol and location. By selecting a symbol, you can view the latest information sent for the corresponding object, as well as the raw packets that produced it. All available objects are also shown in a list, which allows you to search for the ones you are looking for. Messages and bulletins are shown in a separate set of screens, structured like an e-mail client.

With PocketPacket you can follow the status of the APRS network or submit your station's info from anywhere. Monitor moving objects, get real time weather reports directly from local stations and more. Now, with an iPhone/iPod Touch/iPad and PocketPacket, you can have a full-fledged picture of packet activity in a small, portable package - ideal for field work or the ham shack.

Screens and options

The Map screen

Upon opening the app, you are located at the **Map** screen. Here you can see all available APRS objects placed at their corresponding positions. Each object is represented by an icon, or in APRS terms, a symbol. From this screen you have the option to either select a symbol, or one of the four buttons in the top navigation bar.

When touching on a symbol, a small balloon will pop up, that contains the symbol's name or callsign and a button that will move you on to the **Details** screen. On the iPad, because of the larger screen size, the Details screen is shown directly.

The left button on the top navigation bar will slide the map to the right, in order to show the **Search** screen. Next to that

is the button that will take you to the **Messaging** views. From the right buttons, the one with the "target" icon will center the map to your current location and the one with the "gears" icon will take you to the **Settings** screen. Your current location is either automatically found using your device's internal GPS module, or manually set by entering your latitude and longitude coordinates in Settings.

A network connection is necessary for displaying the map, as map data is provided by Google over the Internet.

The Details screen

Each APRS packet, may contain additional information for an object, except from its current location and name. For example, weather stations use a standard format to encode temperature, wind, humidity and pressure measurements, while moving objects, such as cars and trucks, can report their current course and speed. All packets may also include a generic comment, in order to display their sender's current status or other data. All these fields are presented in the **Details** screen. Three buttons at the bottom of the details table, allow you to send an APRS message to the callsign that sent the data (if it supports it), search QRZ.COM for more information, or view the raw packets that produced the respective details.

The Search screen

Here you will see a table of all available object names. By selecting a name, the interface will slide back to the map, centered on the corresponding object. You can narrow down the list of objects, by using the search box at the top of the table.

The Messaging screen

Messaging consists of four tabs - Inbox, Sent messages, Bulletins and Compose. In **Inbox** you will find all incoming messages sent to your callsign or any of the callsigns you have defined as Message groups in Settings. By selecting a message the screen will slide forward to show you the complete conversation with the corresponding callsign. You can reply to the sender by touching the icon on the right of the navigation bar. The **Sent** messages and **Bulletins** and announcements screens function similarly. You can delete unwanted messages from any of these screens by selecting the trashcan icon on the left of the navigation bar or by swiping the message row from right to left.

The **Compose** tab will take you directly to the screen where you enter your message's destination and text. Touch the send button and the message will be delivered with all enabled connections (APRS-IS and/or the Audio Modem).

The Settings screen

This is where you define all variables and select all application options. Settings are shown in a table, consisting of 6 sections.

The **General** section contains your callsign, location, symbol, comment and transmit interval. The **Callsign** you specify will be used for connecting to the APRS-IS server and as the source of generated packets, in case you enable transmission. If you do not have a callsign, it is best that you leave this field empty with the default value of "NOCALL" and do not transmit packets. If you enable the **Track location** switch, PocketPacket will try to update your latitude and longitude from the GPS unit of your device (optionally altitude as well, if **Report altitude** is on). If the switch is disabled, you must enter position details in the **Latitude** and **Longitude** fields. Use signed decimal notation (i.e. 38.0458 for 38° 2' 45" N) or the scroll wheels on the bottom of the screen to specify location degrees, minutes and seconds. If you will transmit packets, select an appropriate **Symbol** for your object and if the symbol allows it, a **Symbol overlay** character or number. The number of available symbols and their types are predefined in the APRS Specification. You can also change the **Comment** text that will be appended to each packet and the **TX interval**, which defines how frequently packets will be sent. If you are not moving, the specification suggests that you select an interval of 30 minutes. PocketPacket will allow you to send packets every 30 seconds, but please do not use such a small value unless you are confident that it is necessary and you understand the implications.

In **View Options** you select whether to display values in the **Metric system** or not, the timeframe of **Visible packets** and the **Map** type (road view, satellite view, or both).

With the options of the **Messaging** group you can define the set of callsigns you want to receive messages for (in addition to your own - of course). These are called **Message groups** and by default include ALL, QST and CQ. Also, set **Delete after** to the amount of time you want to keep your messages.

The **APRS-IS Connection** section allows you to enable or disable a network connection to an APRS-IS server. Touch **Server** to manually enter the server's hostname and port or select one of the available Tier 2 servers (<http://www.aprs2.net>). Also adjust the distance of the **Range filter**. Your location will be applied as the center of the

filter. If you wish to send packets via the APRS-IS server, enable the **Transmit** switch and enter your **Passcode**. Most servers will not accept data, unless your connection is verified using a passcode. If you do not have one, contact your closest server's administrator. Select **Status** to view the server's status page, which lists if your connection is verified or not, as well as the number of packets that have been exchanged between the server and PocketPacket. **Packet flow** will show you the raw packets as they are being sent and received.

Note that, as APRS-IS servers send live data, the connection to the server remains open throughout your APRS-IS session. While the amount of data transferred is not excessive, keep this in mind when connecting via a mobile/cellular network.

Enable PocketPacket's TNC in the **Audio Modem** section. Again, the **Transmit** switch controls if you want to send audio-encoded packets as well. When sending, you should also select a **Digipeater path**. The current specification states that you should specify digipeaters in WIDEn-n notation, where the first "n" designates the locality of the digipeater and the second the number of relay hops. A single path of WIDE2-2 is a commonly suggested for fixed stations. If moving, try WIDE1-1 and WIDE2-1, as suggested in ARRL's VHF Digital Handbook. **Packet flow** will show you the raw packets as they pass through the TNC.

The last section contains links to the **About PocketPacket** screen, containing credits and versioning information and this **Usage guide**.

Interfacing details

When using the **Audio Modem** option, in a very silent environment, even placing your iPhone's built-in microphone close to the transceiver's speaker will let you receive some packets. For best results though, connect your device's microphone-in port to your transceiver's audio or data-out port and vice versa.

The iPhone's microphone-in and audio-out ports are available at the 4 conductor 3.5mm connector located at the top of the device. You can buy an appropriate adapter or easily build your own (tip: left out, ring 1: right out, ring 2: ground, sleeve: mic in). When connecting your iPhone to your transceiver, also consider buying or building a "Sound Card Interface", in order to isolate the path between the radio and the device and to be able to control the volume of the audio channels. Such interface schematics can be found in amateur radio handbooks, radio manuals or the Internet (e.g. check out <http://www.foxdelta.com>). For sending data, as the iPhone lacks an extra control port to provide a PTT signal, you should use an interface that automatically triggers PTT on available audio, or a transceiver that provides such a feature automatically. For instance, the Yaesu FT-897D will automatically transmit when audio is available at the front mic input, when the "VOX" feature is enabled.