Getting started with PinPoint

NOTE: This not an APRS tutorial. To understand APRS capabilities and learn more about its usefulness, please visit http://www.aprs.org or do a search on "APRS Introduction" using any major search engine on the web.

This guide is meant as a quick and dirty configuration and features overview for PinPoint

License

PinPoint ("the software") is free for use by individuals. No warranty is expressed or implied. By using the software you agree to the fact that the author can in no way be held liable for any kind of damages resulting from direct or indirect use of the software. By using the software you also agree to the fact that you are using this software at your own risk and you understand that it should not be used in cases where a human's life depends on it or loss of property is at stake.

System requirements for using PinPoint

- Microsoft .NET framework 2.0 (can be downloaded from http://www.microsoft.com).
- Adobe Reader (can be downloaded from http://www.adobe.com).
- At least one COM port for your TNC and GPS, or two COM ports if connecting the GPS and the TNC directly to your machine. Most USB to COM converters will work just fine.
- Microsoft MapPoint 2004 or MapPoint 2006.
- PinPoint has been tested with Windows XP and Windows Vista, but should run on Windows 98, ME and 2000 as well given the above software has been installed prior to installing PinPoint.

Feedback

Under the Help menu item, you will find a **Send feedback** menu item. If you click on it, Pinpoint will gather some specific system information and include it in a message body that you can add anything to that you like (bugs, feature/enhancement requests, praise).

There is no confidential information being sent via email. Just enough to help troubleshoot in case you are having any problems. You can certainly use the feedback button to request additional future functionality, or just send an email with a quick question.

Once you click Send, make sure to go into your email application to Send/Receive email to ensure the email is going out. With Outlook, if you click Send while the main Outlook screen is not open, the email will sit in your Outbox until the next time you connect to the email server.

If you need general help with APRS (not specific to the use of Pinpoint), please use the web or your peers as your first resource to find any possible answers.

Feedback is always welcome and can also be sent directly to pinpoint@watervoort.com

Installation

Double click on the file called Setup.exe and follow the prompts. No changes are necessary during installation. The default installation options will install PinPoint in the c:\Program Files\PinPoint directory. Please do not change this path, since PinPoint expects to be installed in the c:\Program Files\PinPoint directory (for now).

Note for installing PinPoint on Microsoft Windows Vista (any edition)

When installing PinPoint on Microsoft Windows Vista, navigate to the c:\Program Files\PinPoint directory, **right** click on PinPoint (application), and select the Compatibility tab from the menu. Enable the 'Run this program as an administrator' option and click OK. This will allow PinPoint to change the system time and synchronize it with the GPS. If you chose not to set this option, PinPoint will run just fine, but it will not be able to synchronize your PC to GPS time. Not setting this option will also interfere with logging (debugging) options.

Configuring PinPoint

Connect your TNC to your COM port. If you have a GPS, connect it to the TNC if you have a TNC that is capable of passing through GPS data (like the Kenwood D700, D710 mobile or D7 handheld). Ensure the GPS is set to 4800 baud (bps) and that it puts out standard NMEA sentences, which is usually the default setting.

If you do not have a TNC that can pass through GPS NMEA sentences, you can connect the GPS directly to your PC if you have a second COM port. A GPS with the USB port is not supported, since PinPoint relies on NMEA sentences.

Double click on the PinPoint icon on your desktop. This should start PinPoint.

You should see four windows appear:

- PinPoint – This is the window where all configuration takes place and GPS data is displayed
- Last Heard – Provides an overview of all received APRS messages and position/weather reports

- TNC Data – Shows raw data being sent to and received from the TNC (GPS data also if using GPS pass through capabilities. More on that later). Allows you to send commands to your TNC as well.
- Map – The MapPoint map that shows all position, weather, direction finding, etc information

The first thing you should do is move the windows (drag them and resize them as needed) to your liking. When you exit Pinpoint (using the File > Exit menu) PinPoint will prompt you and ask if you want to save all windows sizes and locations. Answer YES if you would like to retain your changes for next time PinPoint is started up.

Next, let's configure PinPoint so you can get on the air. In principle, the only item you need to configure is your callsign + SSID and your TNC/GPS settings. The defaults should suffice in most cases.

In the PinPoint main window (called PinPoint), select the Tools menu from the menu bar and select Options. This will open up a new window where you can set the desired configuration.

Tools > Options > General tab

My APRS Callsign + SSID: This is your call sign + any SSID you wish to assign. An SSID (Secondary Station Identifier) is used to uniquely identify your station in case you have multiple APRS stations. An SSID is optional. Example: AB0WV-5.

APRS Group code: This is a group/software code that can be used for filtering purposes. Leaving it at the default setting of APZPPT is just fine.

APRS path (Unproto): Determines the number of possible hops your packet will take. In a suburban area WIDE1-1 should work fine. For mobile operation in a suburban area WIDE1-1,WIDE2-1 should work fine. Outside the suburbs, WIDE1-1,WIDE2-2 is recommended.

Position comment: A comment that is sent out with every position report (beacon). Example: "Frank in Castle Rock"

Station icon: The representation on the map that is closest to the vehicle you're driving or building you're in.

Enable APRS DigiPeater: If you would like to serve as a digipeater as well, you can enable the function by checking the box.

Enable APRS beaconing:

> **Beacon at least every 1800 seconds.** The default is to beacon every half hour if stationary or…
>
> **Beacon at least every 3 miles.** If moving, at least beacon every 3 miles or…

Beacon when my heading changes more than 35 degrees. If you are turning corners, send out a beacon as well.

Each beacon as a result of one of the above will reset the timer, traveled distance and change in heading as to reduce the number of beacons.

Beacon my altitude. This option, when checked, will include the altitude in your APRS position report. You can omit it by disabling this option.

Beacon my course and speed. This option, when checked, will include the course and speed in your APRS position report. It should be turned off if you have a stationary APRS setup.

Tools > Options > TNC tab

TNC type: Select the TNC that matches your TNC closest.

COM port: The COM port on your PC that your TNC is connected to.

Speed: The speed of your TNC. The default is set at 9600 bps.

Data bits: The number of data bits your TNC is expecting. Usually 8 bits.

Parity: The parity setting in your TNC. Usually the 'None' setting suffices.

Stop bits: The number of stop bits used for communicating with your TNC. Usually 1 stop bit.

Flow Control: The handshaking method used. If you have an RS-232 cable will all leads connected, try Hardware. Otherwise, try XonXoff or None.

Send startup script when connecting TNC: Highly recommended to leave enabled. This feature initializes your TNC when connecting to your TNC with your call sign and various other parameters specific to APRS.

Send shutdown script when disconnecting TNC: Turns off a few features on your TNC when disconnecting the TNC.

Connect TNC automatically when PinPoint starts: Allows you to connect immediately to your TNC when you start PinPoint up.

Tools > Options > GPS tab

If you have a GPS that is connected to your TNC and your TNC is capable of passing the GPS data to the PC, enable this option.

If you have a GPS connected directly to the PC, disable this option and set the right COM port and speed to match the GPS.

Synchronize PC clock with GPS time will take the atomic-clock-based time from your GPS and synchronize your PC to it when enabled.

Connect GPS automatically when PinPoint starts: Allows you to connect immediately to your GPS when you start PinPoint up (only if GPS is connected directly to PC).

'Process all GPS NMEA sentences' versus 'Process one type of GPS NMEA sentence'. If your PC is older and lacks horsepower (and seems sluggish when running with the 'Process all GPS NMEA sentences' option enabled), you may reduce the amount of CPU required to process GPS data by selecting the 'Process one type of GPS NMEA sentence' option.

Please note that you will not be able to see certain types of data (including the Satellite signal strength window) if you only process one type of GPS NMEA sentence. This option is only available for GPS units that are connected to a TNC that passes the data through. This option does not work for GPS units that are directly connected to the PC.

Initial Position: If you don't have a GPS, you can manually type the Latitude and Longitude in these fields. The first text box is for the whole degrees (always positive), the second for the minutes (decimal up to 4 positions) and the last for the N/S or W/E designator. You may enter your altitude as well.

Tip: SHIFT-click on the map and you will see the latitude and longitude of where you clicked. You could figure out your start position and enter it in the Initial Position fields this way. You will also notice that when you move the mouse over the map that the title bar of the Map window will show the latitude and longitude when the mouse is 'hovering'.

Tools > Options > Map tab

Default map style allows you to change the various map styles available and use it as a default for PinPoint.

Default map location is the file name of the map to use when starting up PinPoint. You could create your own map in MapPoint and then use it as the default startup map in PinPoint this way.

Max number of breadcrumbs while tracking stations. This determines how many breadcrumbs a tracked station will leave behind after which breadcrumbs get cleaned up. If you determine you'd like to track a station (either individually, by right clicking on the call sign in the Last Heard window under Position Reports; select Track from the menu that comes up, or click on the Track button in the main PinPoint window to track all stations on the map) every time a station beacons the system will put a blue dot (breadcrumb) on the map.

In order to keep the map clean, setting the maximum number of breadcrumbs to say ‘10’ means that the oldest breadcrumb gets removed from the map when there are more than 10 breadcrumbs.

Draw lines between breadcrumbs will draw a line in the same color as the breadcrumb between the breadcrumbs on the map as you track the station. This will make the track stand out more. The track does not follow roads, but merely connects the dots (breadcrumbs).

Alternate breadcrumb and line colors between tracked stations will use different color breadcrumbs and styles (circles, triangles, squares) and different color lines (if enabled, see previous option) between breadcrumbs to make multiple tracked stations easier to separate on a map.

Remove position reports I haven’t heard in 90 minutes. Stations that haven’t been heard in a while will be removed from the map (icon, breadcrumbs, lines and all) and from the Position Reports area in the Last Heard window. You have full control over how long stations should stay on the map.

Keep map centered on my position. Keeps the map centered on your latest position using the GPS. That way you can keep an eye on the stations around you without having to pan the map.

Highlight my position on the map makes it a little easier for you to find yourself on the map by adding a yellow circle around your own callsign on the map.

Highlight my beacons on the map when tracking is enabled. When tracking and you receive your own beacons, the yellow breadcrumbs that determine your own beacons are highlighted.

Center map on received position reports will center the map on the next received position report.

Draw line to stations received direct. Any station that your radio/TNC can hear directly (meaning, not needing a digipeater) will be shown on the map as having a line drawn from your position to the station in question. You can control the line color and line width. These lines get cleaned up automatically as the station moves, or as the station is removed from the map as a result of the automatic time-based map ‘cleanup’.

Plot received DF bearings on the map. PinPoint is capable of sending out Direction Finding bearings via radio (Shift Click on the map, select Plot DF bearing) and displaying them on the map when received. Enabling this option allows PinPoint to show any DF bearings received via APRS (PinPoint proprietary feature and APRS experimental protocol extension). You can additionally control the line color and line width on the map for the DF bearing.

Center map on starting point of DF bearings will center the map on the starting point of a received DF bearing.

Tools > Options > Weather tab

You can select the various parameters you would like to see in a detailed weather text balloon on the map (only if the parameter is available in the APRS packet).

Deflating the detailed weather data means that the text balloon with the weather data will be reduced to a call sign only after 2 minutes. You can control the interval at which the text balloons should be deflated.

Tools > Options > Sound tab

Here you can turn **sounds on or off** for the various events. You can also customize using your own sound files.

The **speech synthesizer** (only available in Windows XP and Vista) will help with some announcements if desired (GPS time, Message received).

Tools > Options > Internet tab

This tab is currently not in use and is reserved for future options

Tools > Options > Misc tab

This tab is used for miscellaneous application settings.

Assume APRS Message is for me if only SSID doesn't match. Example: Someone send a message to AB0WV-3, but your station is setup as AB0WV-5. PinPoint would still claim the message as yours if the SSID doesn't match (shows up in bold, speech synthesizer announces message).

Only show APRS messages addressed to me. Filters out any APRS messages not sent to your callsign and doesn't display them. By default, PinPoint shows all messages (including the ones not addressed to you) and shows the messages addressed to you in bold.

Enabled large font mode switches various windows into large font mode for easier reading, especially while driving.

Auto answer APRS message allows you to either always or only while you're driving automatically send a reply to an APRS message addressed to you. That way you can tell someone for instance you're driving and can't type only when you're actually driving. As soon as you stop, the auto answer switches off.

Default night mode color is the default font color for night mode. This does not affect the map color (MapPoint 2006 has a night mode for the map as well. The map is shown in green with a black background. MapPoint 2004 does not support this feature).

Pop-up Message Board window upon receipt of a post. If you do not have the Message Board window up on your screen, enabling this item will pop it up as soon as someone posts a message to the message board. This is a PinPoint proprietary feature and APRS experimental protocol extension.

Log all activity to a file is useful for application debugging. You may turn this feature off if you do not encounter any instability. You may always safely remove the log.txt file in the C:\Program Files\PinPoint directory.

To save your changes, click the OK button. To cancel and therefore not save your changes, click the Cancel button.

Getting on the air

Tune your radio to 144.390 MHz, turn on your TNC and click the TNC button in the main PinPoint window to connect to the TNC. You should see the raw TNC data in the TNC Data window scroll by. If you don't see any responses from the TNC, check your connections and settings to ensure they match the TNC's settings.

If your GPS is connected to your TNC, you should be seeing the Latitude and Longitude vary a little bit every so many seconds in the main PinPoint screen. This is normal.

If you would like to see if your TNC is actually sending you GPS data, click the Show GPS button in the TNC Data window. You should see information scroll by about every 2 seconds that starts with a dollar sign (e.g. $GPRMC…..$GPGGA…..and others) if you accept all sentences (check your Tools > Options > GPS settings) or just the one $GPRMS or $GPGGA sentence every so many seconds again depending on your settings.

If your GPS is connected directly to your PC, click the GPS button in the main PinPoint window. If the GPS button is grayed out, it means that PinPoint is set to accept GPS data through the TNC (pass through is enabled in the Tools > Options > GPS screen).

To enable beaconing, click the Beacon button in the main PinPoint screen. It will immediately beacon a position report, and then consequently according to your settings in Tools > Options > General. If the Beacon button is grayed out after you connected to the TNC, it means that the beacon option in Tools > Options > General is disabled.

To track all stations on the map, you may click the Track button in the main PinPoint window. It will create breadcrumbs for every tracked station and clean them up according to your breadcrumb settings in Tools > Options > Map.

You may also track individual stations by right-clicking on a callsign in the Last Heard window under Position Reports and selecting the 'Track on map' option from the menu that appears when right-clicking.

The Mute button in the main PinPoint window turns off all PinPoint sounds, which could be useful in a situation where you suddenly need silence like watching a video or listening to an audio stream on your PC and you need PinPoint to be quiet.

The iGate button is for future use.

Using Filters

With the use of the Filters option, you can filter out any unwanted stations to prevent your map from getting cluttered. Take a look at the Edit > Filters option to edit your filter. Each of the options within

the filter (E.g. “Only show stations in the following groups”) can be enabled or disabled. Anything you put in the filter will be saved for future use by clicking the OK button.

The Filter button on the PinPoint main screen activates or de-activates the filter. Filter parameters are evaluated from the top down in the Edit Filters window.

Using Alarms

The Alarms feature will allow you to sound an alarm signal when an alarm condition is met. The alarm conditions can be edited under Edit > Alarms and activated / de-activated using the Alarms button on the PinPoint main screen.

You can use Alarms in combination with Filters to only alarm based on very specific conditions. Alarm parameters are evaluated from the top down in the Edit Alarms window.

The File menu

File > Save Map allows you to save the current map including all objects for future use. PinPoint will prompt you to remove all call signs, objects and lines from the map or not before saving. That way you can save a certain view of the map, but not have all the station icons, lines and everything else be saved with it.

File > Load Simulation allows you to load a raw TNC data file (which you can create using the Save button in the TNC Data window) and replay a sequence of packets.

File > Exit shuts down PinPoint

The View menu

View > Map toggles between making the map visible or invisible

View > Map Toolbars > {toolbars} makes the various toolbars visible/invisible within the Map window

View > TNC Data window toggles between making the TNC data window visible or invisible

View > Last Heard window toggles between making the Last Heard window visible or invisible

View > Satellite Signal Strength window toggles between making the Satellite window visible or invisible. You must accept all GPS sentences in **Tools > Options > GPS** for this feature to work, since it relies on a specific GPS sentence ($GPGSV) to be passed by the GPS.

View > Message Board window toggles between making the Message Boars window visible or invisible. The Message Board is comparable to a group chat room. Everyone can post to it and you can use the Filters to filter out unwanted groups, call signs or even based on distance. If you reject all position less reports, no message board postings will show up, since those packets will be rejected. To use the Message Board, just type a message into the bottom half of the Window and press Enter or click Send.

View > Restore Initial Map view restores the map to the view at startup of PinPoint. It will not remove any call signs, objects or lines from the map. You can also press the R key (the main PinPoint window, the Last Heard window or the TNC Data window must be the active screen for the key shortcuts to work. The map window intercepts these key codes for itself, and the shortcuts therefore don't work, yet).

View > Reset All Window Sizes and Locations restores all windows to their initial ('factory default') settings.

View > Switch to Night Mode switches PinPoint into night mode using the font color you set in **Tools > Options > Misc > Default night mode color.** Unfortunately, the only way to revert back to normal mode (right now) is to end and restart PinPoint. This feature also changes the map to night mode (black with green). Changing the map to night mode is only supported by MapPoint 2006, not by MapPoint 2004.

View > Remove all lines from the map removes all lines (DF bearings, hand drawn lines, APRS direct) from the map, but leaves everything else alone.

View > Remove all breadcrumbs from the map removes all tracking breadcrumbs from the map.

View > Clear Map removes all objects from the map (call signs, breadcrumbs, objects, lines, etc) and leaves you with a clean map.

The Tools menu

Tools > Connect to TNC is the same as the TNC button on the PinPoint main window. It connects to the TNC that is configured in **Tools > Options > TNC.**

Tools > Connect to GPS is the same as the GPS button on the PinPoint main window. It connects to the GPS that is configured in **Tools > Options > GPS**. This is only for GPS units directly connected to the PC and not for GPS units connected to the TNC for pass through.

Tools > Re-initialize TNC will send the startup TNC script to the TNC once more.

Tools > Send Message sends an APRS message. You may also right click on a callsign in the Last Heard window under position reports and use the Send Message option. You can also select 'New Message' from the menu that appears when you right click on the Inbox in the Last Heard window.

Tools > Send Bulletin allows you to send an APRS bulletin, which works similar to a regular message, just that the recipient is 'all APRS users'.

Tools > Send Weather report allows you to send a manual weather report via APRS. Please note that if you don't have certain information available, leave the field blank (do not set it to zero). Rainfall needs to be entered in 1/100 of an inch, so if you enter 20, it means 1/5". Barometric pressure is entered in 1/10mBar, so 10000 is 1000 mBar (=1 Bar). Wind speed is entered in Mph, not in knots. When you click Send, the weather report is broadcast over APRS immediately.

Tools > Map FindU history allows you to map the entire history (up to 24 hours) of a specific call sign on the map. Only works when the TNC is not connected and you have Internet access available. The data is retrieved from the FindU website. This can come in handy when you're trying to track someone who is no longer in radio range. To find out more about FindU, go to http://www.findu.com .

Tools > Plot DF bearing on map allows you to draw a Direction Finding triangulation line on the map and send it out via APRS for other PinPoint users to see on their own map as well. You can also shift-click on the map and select the Plot DF bearing on map option from the menu. You can plot a DF bearing from your current position, from the position where you shift clicked on the map, or manually enter coordinates in decimal degrees. You need to have the **Plot Received DF bearings on map** feature enabled in **Tools > Options > Map** in order to receive bearings.

Tools > Options allows you to setup and change the configuration. While the TNC is connected a limited number of parameters can be changed. To change parameters that are grayed out, disconnect the TNC first.

Other PinPoint features

Keyboard shortcuts

The main PinPoint window, the Last Heard window or the TNC Data window must be the active screen for the key shortcuts to work. The map window intercepts these keycodes for itself, and the shortcuts therefore don't work, yet.

Z – Zoom – Temporarily zooms in / out on the area currently centered on the map

R – Restore Initial Map View – Restores the map view you had when PinPoint started up

M – Minimize all pinpoint windows to the task bar

N – Night mode – Sets all windows and map to night mode. To restore non-night mode, restart PinPoint (night mode map only supported by MapPoint 2006, not by MapPoint 2004).

B – Force beacon – Beacons immediately if the TNC is connected

F – FindU lookup – Plots FindU history on the map for the entered callsign. Requires Internet access.

P – Presbyopia mode – Changes PinPoint windows to use larger fonts

W – Reset the main PinPoint window (PinPoint, Last Heard, TNC Data, Map) sizes and locations to factory default settings.

D – Plot DF bearing on map shortcut

APRS messages

APRS Messages show up in the Inbox in the Last Heard window. Click on a message to read it. You may Reply, Forward or Delete right from the message window. Messages shown in bold are addressed to you. Once you have read a message, it will no longer be shown in bold.

Right click on the Inbox to start a new message, or just right click on a call sign to create a message that will pre-populate the recipient's call sign.

The messages you have sent can be found in the Sent folder in the Last Heard window.

Sending commands to your TNC

Should the need arise to communicate directly with your TNC, you can type a TNC command in the text box at the bottom of the TNC Data window and press Enter or click Send to send it to the TNC. The TNC Data window will show the response from the TNC (if any).

Map Shift-Click

You can hold down the Shift key and click anywhere on the map to see a whole new set of options.

Latitude and Longitude of where you clicked are displayed.

The distance shown is the distance from your own position.

Set my current position to where I clicked allows you to change your own location without needing a GPS.

Show aerial view of where I clicked will open a window and show a satellite image of the area where you clicked on the map (Internet access required). You can zoom-in or out, or in most cases (urban areas) you will be able to get a bird's eye view (much more detail than satellite imagery) as well.

Get driving directions to where I clicked will immediately provide you with turn-by-turn driving directions on how to get from your current position to where you clicked on the map. The amount of travel time is also displayed.

Plot DF Bearing from where I clicked allows you to create DF bearing (that can be broadcast over APRS if desired) that will be put on the map with the starting point at the location you clicked.

Add object to the map allows you to create (and broadcast) an object on the map, for instance a meeting point that others can see o their maps. You do not need PinPoint to see the object appear on your map. Any APRS software will interpret this object and show it on the map. The Tactical call can be your callsign with a different SSID or anything else. Example 'BKFAST' or 'SHELTER1'.

Right-Click a callsign in the Position Reports tree

You can right click on a call sign under position reports and have the following set of options.

Track on map allows you to individually toggle tracking on or off for a station. Breadcrumbs will be shown on the map when the station in question is on the move.

Show on map moves (centers) the map to the callsign in question, just in case you couldn't find it before.

Show aerial view shows a satellite image of the location that the station is located at. Works the same as the Show aerial view of where I clicked option in Map Shift-Click (previous section). Requires Internet access.

Callsign lookup will look up the callsign in question (after stripping off the SSID) on QRZ in a new window. Requires Internet access.

Send message will open up the compose APRS message window with the call sign in question pre-propagated as the recipient.

Get driving directions will create turn-by-turn driving directions to get from your current location to the location of the station in question.

Remove station removes the station from the Last Heard window (not from the map).

Sort Alphabetically will sort the entire Last Heard tree alphabetically.

Get FindU history will map the entire known FindU history on the map for the station in question (last 24 hours max, only works with TNC disconnected).

Plot DF bearing will plot a DF bearing using the location of the station you right-clicked on as the starting point. This option is great for when the station in question is reporting his/her DF bearing via voice and you want to plot it on a map and share it with others using PinPoint. All they would need to tell you is their bearing. The starting point is already conveyed via APRS (make sure the station beacons to make sure you have their latest position).