

# Using TerraSync Navigation to Find Distances Between Points

June 17, 2008

The following instructions will describe how to use TerraSync's Navigational tools to find the distance between a starting point and other points.

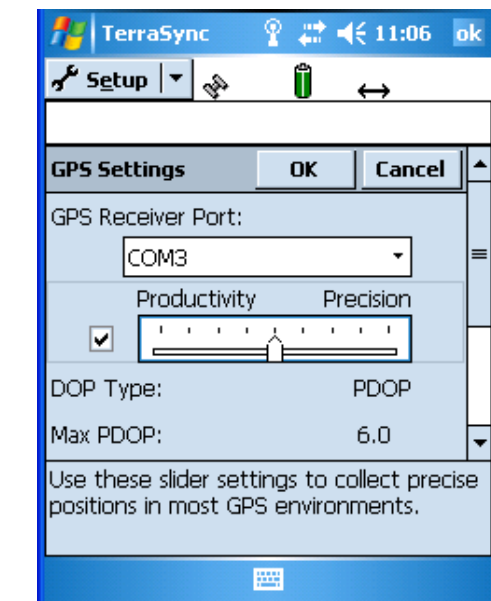
## Preparing the GeoXT and TerraSync

Before starting a field session, make sure the GeoXT is fully charged. You can check the battery level on the handheld by going to *Start>Settings>System tab>Power*.

Make sure TerraSync is set up properly to get the best accuracy out of your GeoXT. To start the TerraSync software, do one of the following:

- Tap *Start/Programs/TerraSync*.
- Tap *Start*, and then tap the TerraSync icon on the recently-used programs list.

While the software is loading, a Trimble identification screen appears. The software always opens at the Skyplot subsection of the Status section.



Tap the dropdown arrow to the right of Status, and go to Setup.

Tap *GPS Settings*, and make sure the GPS Receiver Port is set to COM 3.

Check the box next to the Productivity/Precision slider bar, and make sure it is set exactly in the middle.

This will automatically set the Max PDOP to 6, the Minimum SNR to 39 and the Minimum Elevation to 15.

Both the Velocity Filter and the NMEA Output should be Off. Tap OK.

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P. O. Box 31, Jerome, ID 83338

Ph: (208) 324-8006 Fax: (208) 324-8015 [www.elecddata.com](http://www.elecddata.com) [support@elecddata.com](mailto:support@elecddata.com)

Tap *Real-time Settings*.

Set Choice 1 to Integrated SBAS, Choice 2 to Use Uncorrected GPS, and set the Real-time Age Limit to 1 minute.

Tap OK.

Tap *Coordinate System*, and make sure the System is set to Latitude/Longitude and the datum to WGS 84. This will ensure that you can obtain an accurate position fix, no matter where you are located. You do not have to worry about setting this to a projection specific to your area as you will be measuring the actual distance between two points, not the map distance.

The Altitude Reference and Altitude Units will not make a difference in your horizontal navigation.

Set the Coordinate Units to meters.

Tap OK.


Tap *Units*, and make sure the Distance Units are set to meters.

The rest of the unit settings will not matter for the purpose of measuring a distance between two points.

Tap OK.

All the settings will be saved when you close TerraSync, so you can close the application and turn the GeoXT off until you are in the field and ready to begin using the GPS unit.

### **Connecting to GPS and Checking the Accuracy**

TerraSync will usually automatically connect to GPS when it is opened. At the top of the screen, you will see two plugs  attempting to connect.

If TerraSync connects to the receiver, the plugs will change to a number (usually a flashing zero to begin with) that represents the number of satellites that are being used to calculate your position. Four or more satellites will be needed to calculate a position.

*Note: If the Skyplot page shows a message that says “GPS is disconnected”, tap the dropdown next to Skyplot and tap on Setup. Tap the GPS button in the upper right corner, and TerraSync will connect to the receiver.*


When there are enough satellites being tracked to calculate a position, you will also see the estimated accuracy  $71\text{cm}$  at the top of the screen.

Wait until the estimated accuracy number is low enough to meet your needs before you set your start or end point.

For example, if you require accuracy of 1 meter, you will want to make sure the estimated accuracy is less than 1 meter before you collect the position. The lower the number, the more accurate your distance measurements will be.

This will be especially important at your starting point because all your distance measurements will be referenced to this position.

*Note: In order to achieve submeter accuracy, you must be locked on to a real-time source. You will be able to determine if these corrections are being applied by watching the antenna icon at the top of the screen. When it is flashing, it is still searching for the real-time correction source.*

When it is solid and looks like this  TerraSync has locked on to a real-time correction source and is applying the corrections.

## Setting the Starting Point

When you have reached the starting point of your project, tap the dropdown next to Status, and go to Navigation.

Tap the dropdown next to Navigate, and tap on Waypoints.

Tap New to create a new Waypoint File. The default file name is based on the date and time the file is created. You can change the name if you like, but be sure to use only letters and numbers in the file name. Tap OK, and the new file will be opened.

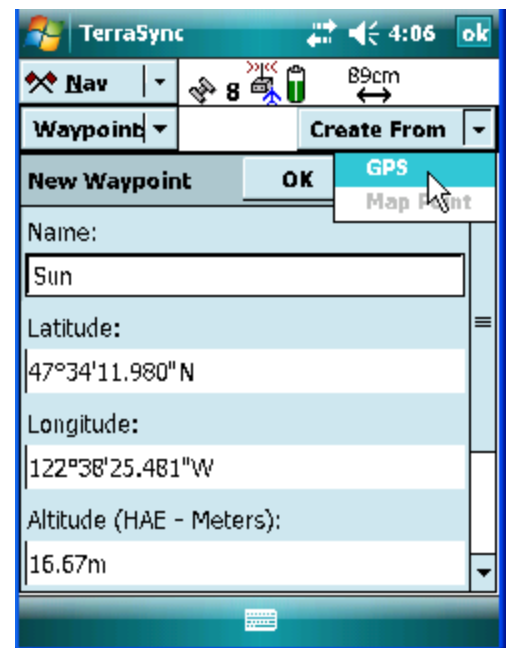
Tap the dropdown next to Options, and tap New.

The New Waypoint form will be opened.

Name the point. For example, call it Start or Sun.

Tap the dropdown arrow next to Create From, and tap GPS to record the current position.

Tap OK.



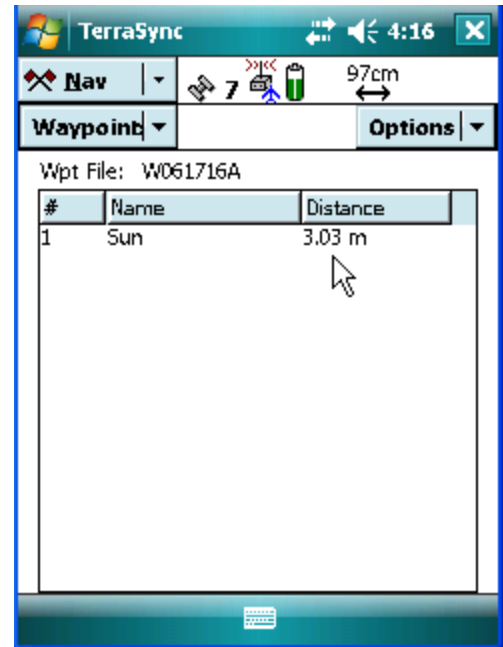
## Using Navigation to Measure Distances

You will now see your starting point listed in the Waypoint file, and you will see the distance you are from this point.

You can use this to find the location of your next point.

You do not have to record the location of your next point. However, it may be helpful if you find you need to navigate back to this point for any reason.

To log this point, follow the directions for logging the starting point.



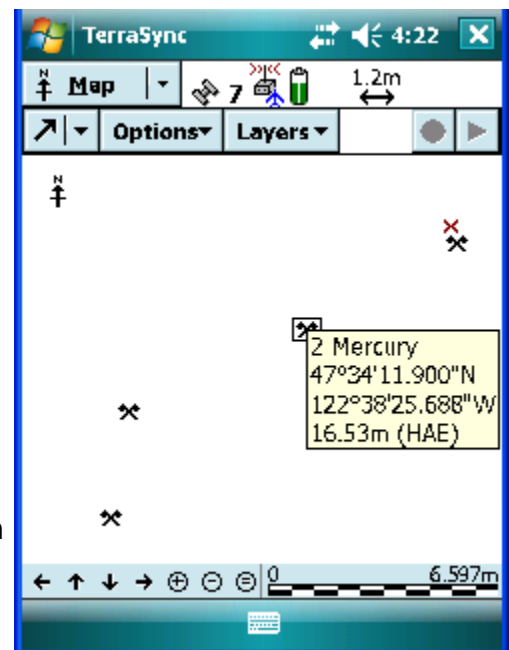
## Viewing the Map

You can use the Map section of TerraSync to see your GPS position relative to the points you have collected or see information about the Waypoints themselves.

To view the map, tap the dropdown arrow next to Nav, and tap Map.

The x is your current GPS location, and the flagged points are the waypoints you have collected.

You can use the tools in this section to zoom in to a certain area, or you can use the select tool to tap on a waypoint and see the properties of that point.



**When you are finished with a field session, make sure you close TerraSync before turning the GeoXT off. Failing to close TerraSync before turning the unit off could result in a corrupted Waypoint file.**