



# Trimble TerraSync

## User Guide for Laser GPS Offset



# Intro

Trimble® TerraSync™ software is designed for fast and efficient field GIS data collection and maintenance.

Integrating all the ways you collect data—with a GNSS handheld computer, laser rangefinder, or centimeter-grade equipment—it's a powerful system for the collection of high quality feature and position data for GIS update and maintenance.

# Intro

Rangefinders are typically used for GIS data collection for the following situations:

- When mapping the location of an object which is inaccessible, either because it is difficult to get to or it is not safe to get to the object. For example, a tree on an island, or a manhole in the middle of a busy road.
- When mapping the location of an object where it is not possible to get a GPS signal, or a GPS position of sufficient accuracy. For example, under a large tree or in a narrow street or 'urban canyon'.



# Requirements

## **Trimble TerraSync: 5.10 and later; Professional Edition**

- Supported handheld computers with integrated GNSS
  - Trimble GeoExplorer® family
  - Trimble Juno® series
  - Trimble Nomad® G series
  - Trimble Yuma® 2 rugged tablet computer
- Operating system
  - Windows Mobile® version 5.0 or 6.x, Windows Embedded Handheld 6.x


## **Laser Technology Inc. Lasers**

- TruPulse 200/360 models
- MapStar TruAngle




# Instructions: Connecting & Activating TruPulse

1. Connect TruPulse to the data collector/GPS device using the appropriate cables, null modem adapters, and gender changers, or Bluetooth communication settings.
  - a. Refer to “BluetoothSetup\_070914” User’s Guide to connect the TruPulse Bluetooth models to the data collector/GPS device via Bluetooth.
  - b. Connecting a TruPulse model using a cable will require additional cables from Trimble depending on the device:



# Instructions: Connecting & Activating TruPulse

- i. Juno5: LTI 4pin to DB9 cable #7053038 and the Trimble P/N 99815-01:
  1. This serial adapter cable provides an external serial port for Juno 5 series handhelds. The 9-pin DE-9 serial port can be used to input real-time corrections, or to connect a laser rangefinder or other external device to the handheld, or it can be used to output NMEA data to another device.



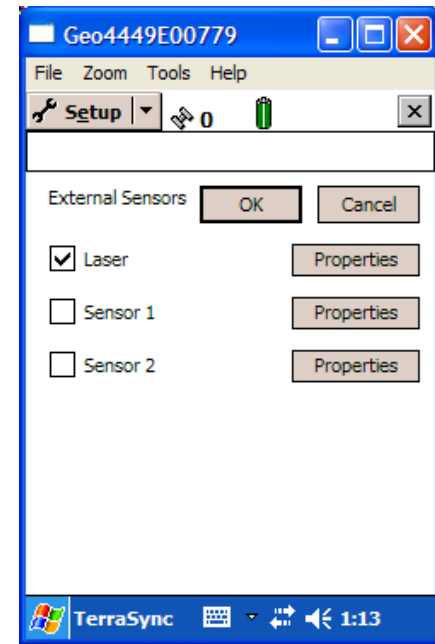
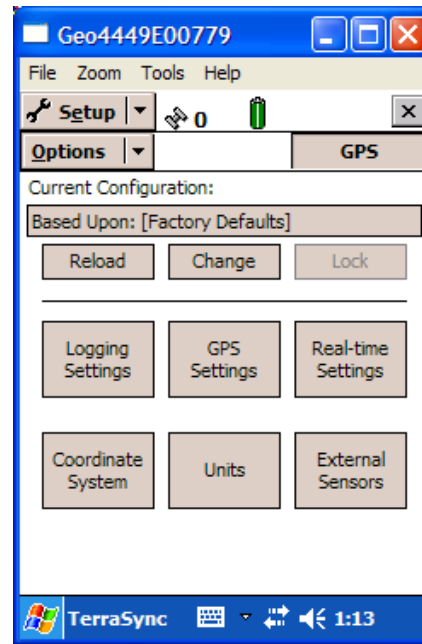
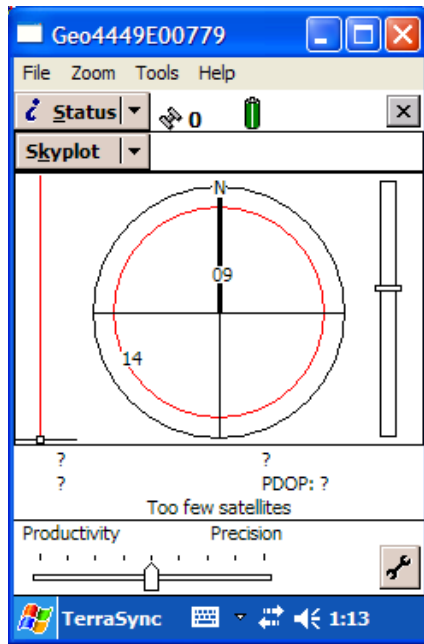
# Instructions: Connecting & Activating TruPulse

- i. GEO 6000: LTI 4pin to DB9 cable #7053038 and a cable accessory from Trimble: USB to Serial Converter Cable (Mini-A to DE9-M) P/N 88049-03
  1. This USB to serial converter cable provides both an external serial port for GeoExplorer 6000 series handhelds. The 9-pin DE-9 serial port can be used to input real-time corrections, or to connect a laser rangefinder or other external device to the handheld, or it can be used to output NMEA-0183 data to another device. This accessory is not compatible with previous GeoExplorer series handhelds.



# Instructions: Connecting & Activating TruPulse

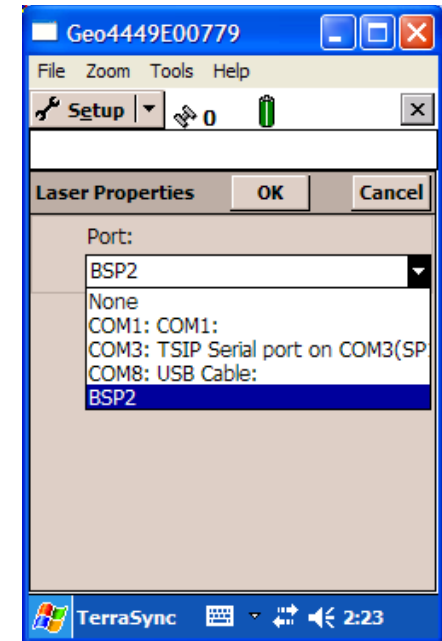
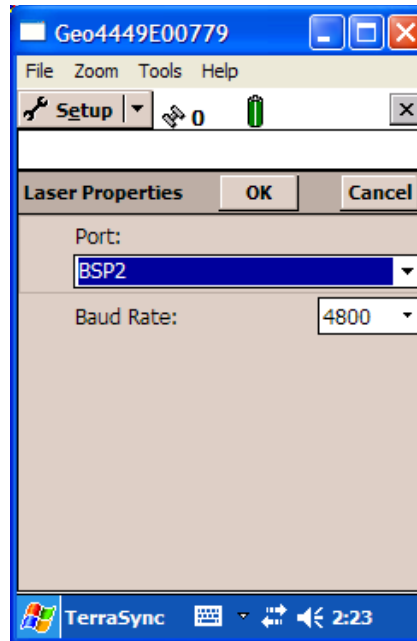
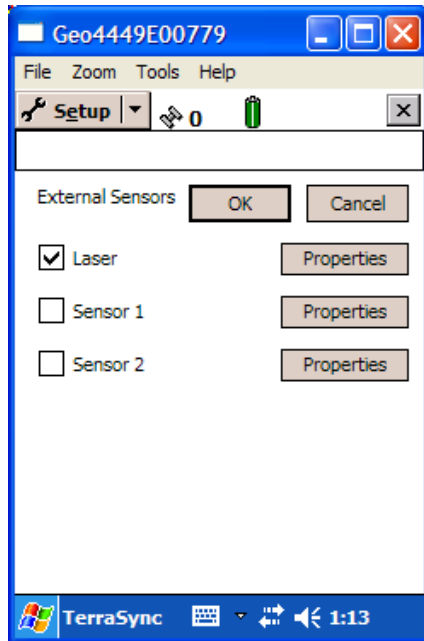
2. Start TerraSync on your device; From the Status Drop down menu, choose the Setup Menu and select External Sensors button.



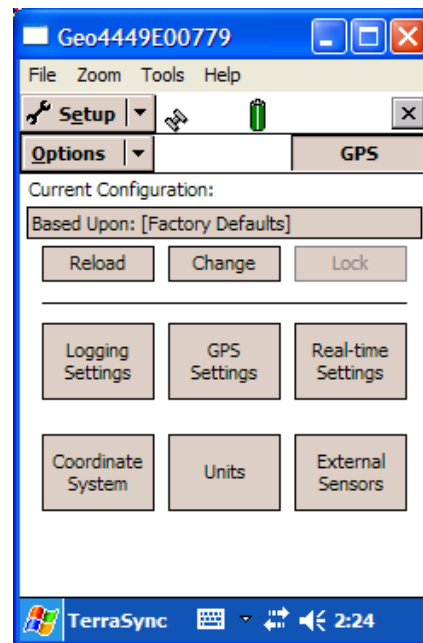
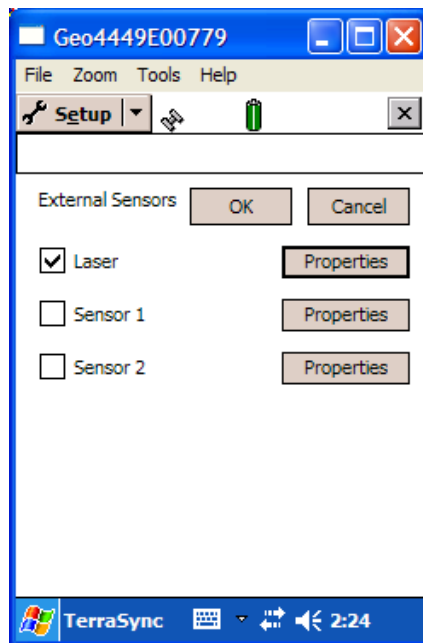
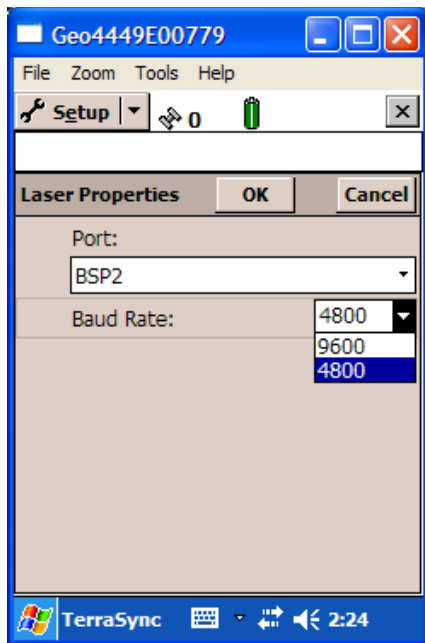


# Instructions: Connecting & Activating TruPulse

3. Tap Properties next to Laser and from the drop down menu of Port, set to the Comm port you when connected to the TruPulse and the Baud Rate to 4800. Tap OK. Check the box to the left of Laser and tap OK.



# Instructions: Connecting & Activating TruPulse






# TerraSync Offset overview

- To record an offset from a laser rangefinder, make sure that a feature is open, and that the attribute entry form for the feature, the appropriate offset form, or the Map screen is open. Then fire the laser rangefinder. The TerraSync software stores the distance and, if the laser rangefinder supports it, the bearing, in the appropriate field(s) in the offset form.
- Before storing an offset from a laser rangefinder, the TerraSync software subtracts the antenna height from the measurement. The antenna height is specified in the Setup section.



# TerraSync Offset overview

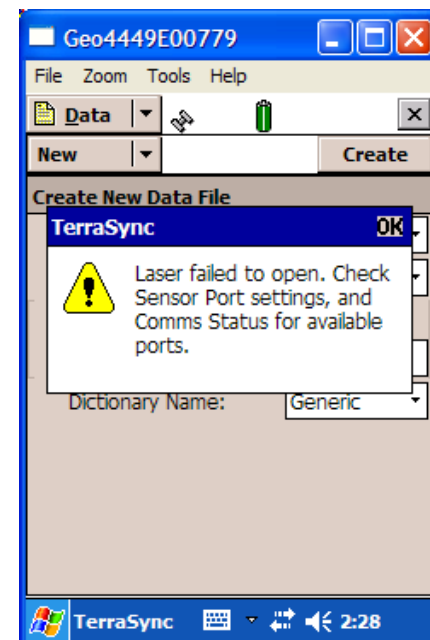
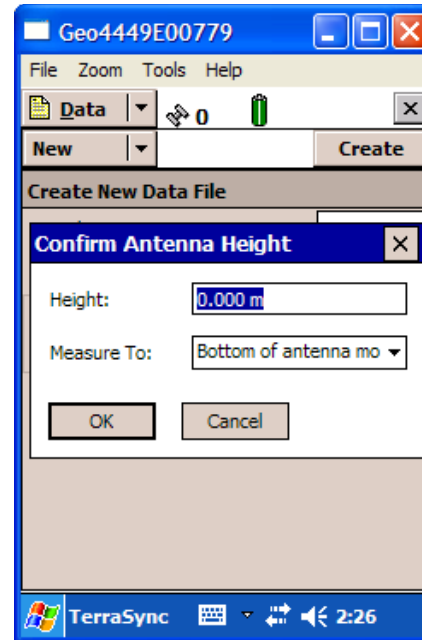
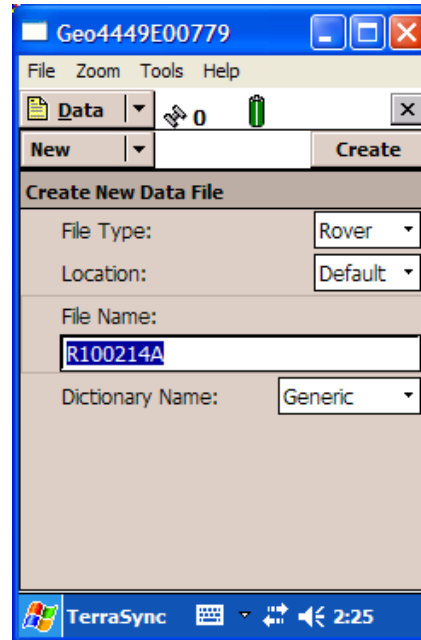
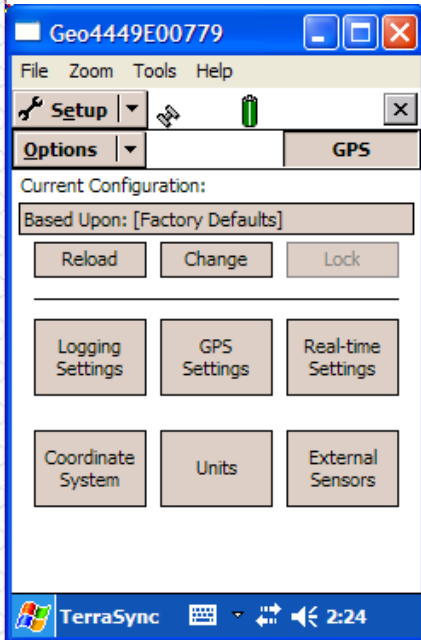
- An incorrect antenna height can reduce the vertical accuracy of the position of the feature. If vertical accuracy is important, make sure that you do the following:
  - Set the antenna height to the vertical distance from the laser rangefinder to the antenna, not to the distance from the ground to the antenna. You can use a configuration file to do this.
  - Keep the TruPulse 18" away from the antenna phase center as possible when shooting. This is to avoid any magnetic interference with the compass (bearing) values.
  - Shoot at a higher position on the feature to compensate for the antenna height being subtracted from the altitude of the feature.



# Distance-Bearing Laser Offset: TruPulse 360 models only

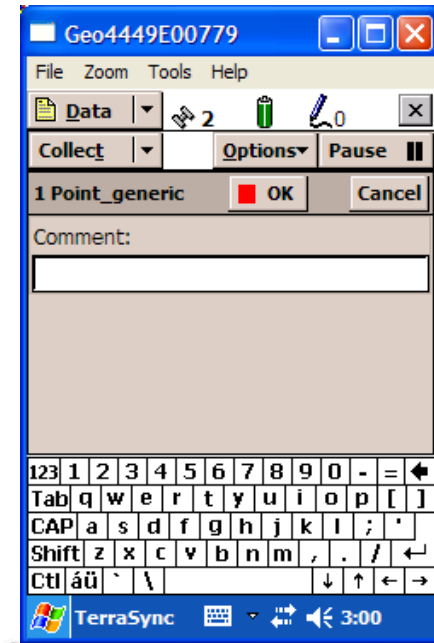
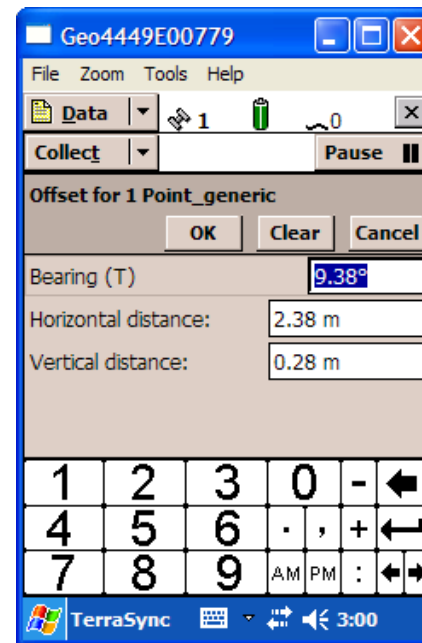
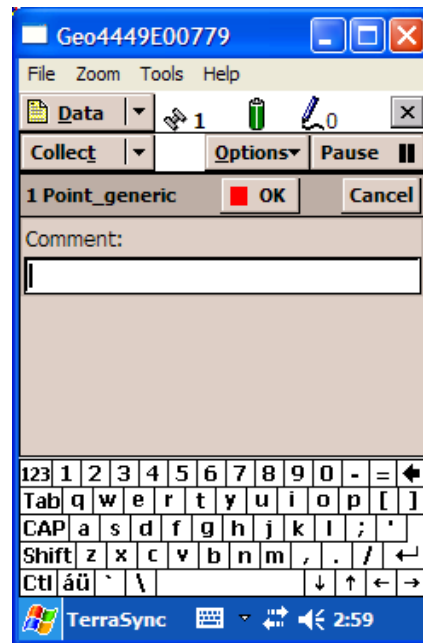
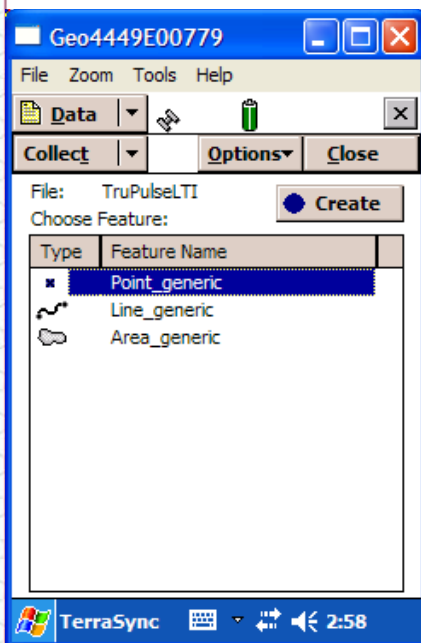
1. Click on the Setup Drop Down Menu and select Data. Now one needs to create or open an existing file. Create a file by accepting the default File Name or entering a new one, and then tap the Create button. Next enter the Height difference between the bottom of the GPS antenna and the laser sighting scope and hit OK.
  - a. \*Note: At this point TerraSync will want to connect to the TruPulse. If you get an error like the example below, go back to the Bluetooth Connections screen and make sure that Mode is Discoverable. You may also have to Bond with the laser again when opening a Data File and re-enter the PIN (1111).

# Cont



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2. From the Data Collect Screen, one will choose a feature to collect, by a tap on Point\_generic and then tap the Create button. Add a comment for the feature being created. If a Range / Azimuth offset are desired, fire the TruPulse 360 and the distance will automatically download and come through on the screen. The Bearing (T) value will fill in with a number. Press OK and then enter a comment if desired.

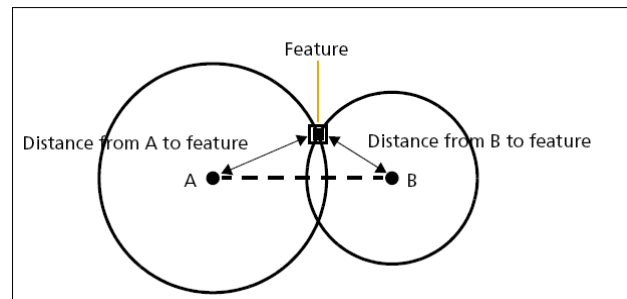




# Distance - Distance Laser Offset: TruPulse 200 only

## Offset Methods:

- Distance- Distance Offset Method: Preferred method when using Laser Technology, Inc. TruPulse 200 model. The TruPulse 200 model does NOT have an Azimuth/Compass solution built in.
- A distance-distance offset uses the distance between the feature and two reference positions (A and B) to specify the feature's position. The feature lies at the point where the circles centered on A and B intersect.
- Because there are two points where the circles intersect, you need to specify which direction the feature is in, relative to the path from A to B.





# Cont

- To get a different Offset Method, from the Data Collect Screen, one will choose a feature to collect, by a tap on Point\_generic and then tap the Create button. Add a comment for the feature being created. Tap Options drop down menu, choose Offset. Now choose the Offset desired and select it from the list. Follow the instructions to perform the measurements.

**Laser Technology Inc.**

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