



GETTING STARTED GUIDE

TerraSync™ software



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TerraSync™ software

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Introduction

In this chapter:

- [Welcome](#)
- [Documentation Conventions](#)
- [The TerraSync Software](#)
- [The TerraSync Standard Edition Software](#)
- [System Requirements](#)
- [Finding Additional Information](#)
- [Technical Assistance](#)
- [Your Comments](#)

Welcome

Welcome to the *TerraSync Software Getting Started Guide*.

This manual provides:

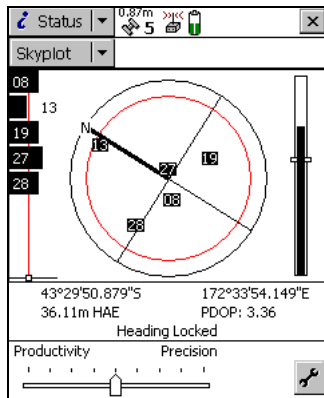
- an overview of the TerraSync™ software (see [page 11](#))
- a tutorial on using the TerraSync software (see [page 21](#))
- a guide to the user interface and general operation of the TerraSync software, including keys and screens (see [page 69](#))

Even if you have used other Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

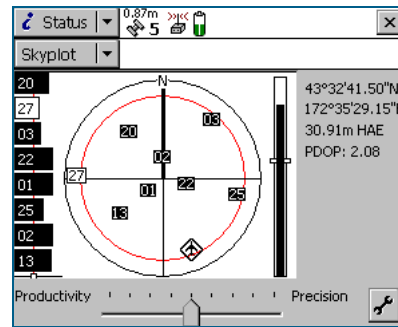
This publication assumes that you know how to use the Microsoft® Windows® operating system.

Documentation Conventions

The documentation shows the TerraSync software as it appears on a portrait orientation handheld PC 2000 with a 240 × 320 pixel screen. On a larger screen, or in landscape orientation, some elements of the software are displayed differently. However, there is no functional difference between the displays.



Portrait orientation (240 x 320)



Landscape orientation (320 x 240)

The TerraSync Software

The TerraSync software is designed for collecting and updating geographical data (GIS and spatial data) on a field computer. A field computer is one of the following:

- a CE device (a handheld PC 2000 or Pocket PC running a supported Microsoft Windows CE operating system, or the Windows Mobile™ software)
- a PC (a desktop computer, laptop computer, or Tablet PC running a supported Microsoft Windows desktop operating system)

You can connect a GPS receiver to a field computer that has the TerraSync software installed and use the software to track GPS status, log data and update existing data, and navigate in the field.

The TerraSync software acts as the *controlling software*. It communicates with a range of Trimble® **GPS receivers (see page 6)** connected to the field computer, allowing you to set GPS parameters in the receiver, record GPS positions on the field computer, and update existing GIS data.

The software can be used with a wide variety of real-time sources of differential corrections, including an integrated beacon receiver, integrated satellite receiver, integrated SBAS (Satellite Based Augmentation System) receiver, external radio, Virtual Reference Station (VRS™) or Beacon-on-a-Belt (BoB™) receiver.

The TerraSync software provides mission planning in the field and data dictionary creation and editing. Trimble postprocessing software (the GPS Pathfinder® Office software and the GPS Analyst™ extension for ESRI ArcGIS software) works with the TerraSync software, providing data dictionary creation, as well as data transfer, data import and export, and postprocessing.

The TerraSync Standard Edition Software

The TerraSync Standard edition software is a limited version of the TerraSync software. If you have purchased the TerraSync Standard edition software, the following restrictions apply:

- You cannot open imported data files. This applies to:
 - SSF files transferred to TerraSync Standard edition software using the Trimble Data Transfer utility
 - Data files created from Shapefiles
 - Data files received by e-mail

Note – You can use the TerraSync Standard edition software to update data files that you have created in the TerraSync software, but that you have not yet transferred from the field computer. However, because of the way in which GPS times are stored, you cannot update GPS positions in files that are more than a week old.

- You cannot display a background image or data file in the Map section.
- External sensors (including laser rangefinders) are not supported.
- RTK data collection using a survey receiver is not supported.

You can upgrade the TerraSync Standard edition software to the TerraSync Professional edition software, which provides the full TerraSync software functionality. To do this, contact your local Trimble dealer.

This manual describes the TerraSync Professional edition software. If a feature or option it describes is not available in the TerraSync Standard edition software, this is indicated with a note at the beginning of the relevant section.

System Requirements

Field computer specifications

The TerraSync software is designed to run on any of the following field computers:

- a CE device (a handheld PC 2000 or Pocket PC running a supported Microsoft Windows CE operating system, or the Windows Mobile software)
- a PC (a desktop computer, laptop computer, or Tablet PC running a supported Microsoft Windows desktop operating system)

For detailed specifications, including supported operating systems, processors, and memory requirements, refer to the Trimble website at www.trimble.com/terrasync_specs.html.

Required software

To transfer files between a desktop computer and a field computer running the version 2.50 TerraSync software, you must have one of the following installed on the desktop computer:

- the Trimble Data Transfer utility, which is available on the *TerraSync Software CD* or for free download from the Trimble website at www.trimble.com/datatransfer.html
- version 3.10 or later of the Trimble GPS Pathfinder Office software

GPS receivers

You can connect a field computer running the TerraSync software to the following GPS receivers:

- GeoExplorer[®] series handhelds with integrated GPS receiver:
 - GeoXM[™] handheld
 - GeoXT[™] handheld
- GPS Pathfinder Pocket receiver
- GPS Pathfinder Power receiver
- GPS Pathfinder Pro series receivers:
 - GPS Pathfinder ProXT[™] receiver
 - GPS Pathfinder ProXH[™] receiver
- GPS Pathfinder Pro XR receiver
- GPS Pathfinder Pro XRS receiver

- Supported survey GPS receivers:
 - 5700 receiver
 - 5800 receiver
 - R8 receiver

For information on connecting to a receiver, refer to the *TerraSync Software Release Notes*.

Finding Additional Information

In addition to the *TerraSync Software Getting Started Guide* (this document), the following documentation is available:

- *TerraSync Software Reference Manual*
- *TerraSync Software Online Help*
- *TerraSync Software Release Notes*

TerraSync Software Reference Manual

The *TerraSync Software Reference Manual* provides information on:

- advanced functions
- all screens and controls
- troubleshooting

It also includes a glossary of terms.


The *TerraSync Software Reference Manual* is provided in PDF format on the *TerraSync Software CD*.


Online Help

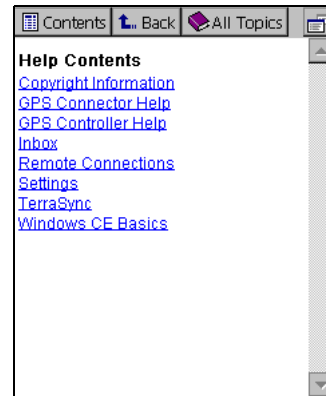
You can access the *TerraSync Software Help* on your field computer. This screen-by-screen reference explains all screen controls.

Help is context-sensitive. If you access the Help while the TerraSync software is running, it opens at the topic that corresponds to the current TerraSync screen.

To access context-sensitive Help from within the TerraSync software:

- when using a Pocket PC or an H/PC 2000, tap  and select *Help*
- when using a PC, press **F1**
- when using a field computer with a physical keyboard, you can also hold down the **[Alt]** key on the keyboard and then press **[H]**

If you tap  and select *Help* on an H/PC 2000, or on a Pocket PC when the TerraSync software is not running, the main *Help Contents* appears. Select TerraSync to open the Contents topic of the TerraSync Help.



Release Notes

The *TerraSync Software Release Notes* are included with the software in printed form and provide:

- information on new or changed features
- installation instructions
- cabling diagrams

Technical Assistance

If you have a problem and cannot find the information you need in the product documentation, contact your local dealer. Alternatively, request technical support at www.trimble.com/support.html.

Your Comments

Your feedback about the supporting documentation helps us to improve it with each revision. E-mail your comments to ReaderFeedback@trimble.com.






TerraSync Software Overview

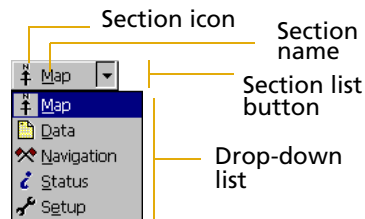
In this chapter:

- **Introduction**
- **Sections**
- **Panes**
- **Section Structure**
- **Section Structure Lists**



Introduction

The TerraSync software is arranged in the following five sections:

-  Map section
-  Data section
-  Navigation section
-  Status section
-  Setup section



One of these sections is always active and visible. The Section list button shows the section that is currently active. You can move between sections at any time without closing any open forms or screens. To switch to a different section, tap the Section list button and then select the section you want from the drop-down list.

For example, to switch from the Map section to the Data section, tap the Section list button and then select  Data. The button now shows  Data, and the Data section is active. When you return to the Map section, the screen or form that was open when you left the Map section appears again.



Tip – You can also use **Keyboard shortcuts (see page 101)** to move between sections.

Sections

The TerraSync software sections are used as follows:

- **Data** section – to update data from an existing GIS, CAD, or spatial database. You can:
 - review, edit, and update the positions and attributes for features
 - filter data to identify the features required for data maintenance

- accurately and efficiently collect the attributes and GPS position of geographic points, lines, and areas

This information is stored in one or more data files that you can transfer to the Trimble postprocessing software. Data can then be exported into a wide range of GIS-compatible formats.

- **Map** section and **Navigation** section – to navigate to specific locations. You can use real-time differential GPS to optimize navigation and provide in-field differential accuracy. The TerraSync software is compatible with a range of real-time correction sources.

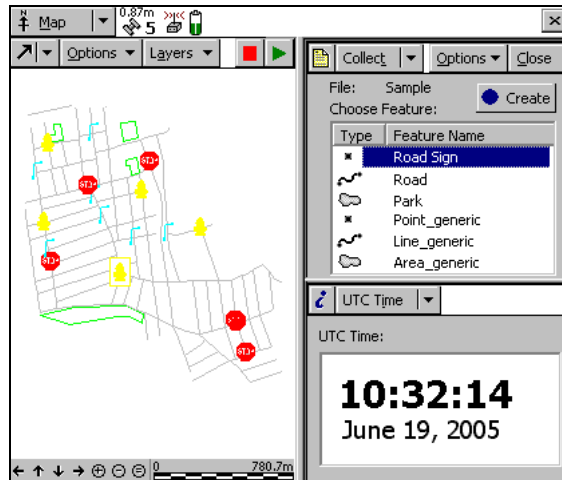
The **Map** section shows you all the features in the open data file. A raster or vector map can be displayed in the background for reference.

- **Setup** section – to control how the TerraSync software interacts with the GPS receiver and with any real-time correction sources, and to configure data collection and display settings.
- **Status** section – to view summary or detailed information about the software, the GPS receiver, any real-time source you have configured, and the location and health of the satellites the receiver is tracking.

Panes

If you use the TerraSync software on a field computer that has a screen size of 640×240 pixels or larger, the screen is arranged in panes. Each pane displays a section of the software.

Depending on the screen resolution, up to three panes can be displayed. By default, when the TerraSync software opens, the Map, Data, and Status sections are displayed.



To change the size of a pane, drag the resize bar between it and the next pane. Each pane has a minimum size, so if resizing would make a pane smaller than its minimum dimensions, it is automatically hidden. You can use this feature to create three-pane, two-pane, or single-pane layouts.

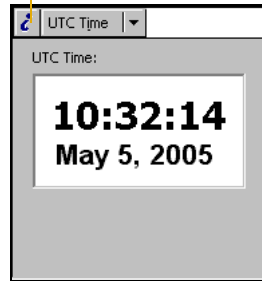
The Section list button determines which section appears in the **primary** pane. The primary pane is the left pane, or the top pane if only two panes are visible.

To change the section that is displayed in the primary pane, tap the Section list button and select a section from the list. If the section is already displayed in a secondary pane, the two sections switch position.

To change the section that is displayed in a secondary pane, tap the Mini Section list button that appears in the top left corner of the pane. Then select a section from the list.

To move a section to a different pane, tap and hold the Mini Section list button. The icon for the section appears. Drag the icon into the pane where you want the section to be displayed. When you drop the icon, the two sections switch position.

Mini Section list button



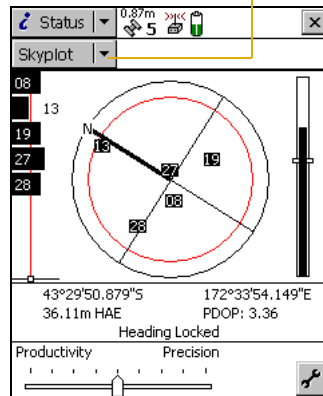
Section Structure

Some sections have a number of **subsections**. If the current section has subsections, the Subsection list button is visible. You can switch to a different subsection of the current section at any time. To do this, tap the Subsection list button and select the subsection you want from the drop-down list.

For example, if you are in the Skyplot subsection of the Status section, the Subsection list button displays Skyplot. To switch to the Satellite Information subsection, tap the Subsection list button and select Satellite Information.

Some subsections are not always available. For example, in the Data section, you cannot open the Collect Features subsection until you open or create a data file.

Subsection list button



Some screens also contain buttons and menu buttons that let you open other screens or forms.

Section Structure Lists

The next five lists outline the TerraSync software section structure. Use them as a reference until you are familiar with the sections and their subsections.

Map section

Map Tools	Select Zoom In Zoom Out Pan Digitize Measure
Options	Zoom Extents Auto Pan to GPS Position Auto Pan to Selection Filter Update Selected Feature Delete Selected Feature Set Nav Start Set Nav Target Clear Nav Targets Cross-Track Light Bar Enter Coordinates Refresh
Layers	Filtered Features Unfiltered Features Between Feature GPS Background GPS Trail Background File Layer Formatting

- Undo**
- End Measurement**
- Create/End Feature**
- Log/Pause/Resume**

Navigation section

- Options** Navigation Options

Data section

New File	Create		
Existing File	Open		
Update Features	Update Features Form	Options	Show Filtered Features Show Unfiltered Features Filter Delete Undelete Set Nav Start Set Nav Target Clear Nav Targets Logging Interval Continue
		Attribute Entry Form	Offset New Vertex Logging Interval Segment Line Log Pause Resume
			Log/Pause/Resume

Collect Features	Collect Features Form	Options	Logging Interval Repeat Log Now Log Later Continue
		Attribute Entry Form	Options Offset New Vertex Logging Interval Segment Line Log Pause Resume
Log/Pause/Resume			
File Manager	Options	Delete Copy to Rename Move to Send via E-mail Receive via E-mail Edit embedded dictionary New dictionary Read dictionary from data Read data from shape Write data to shape Extract new data from file	

Status section

Skyplot	
Satellite Information	
Receiver	
Real-time	Real-time Summary screen External Source Status screen External Beacon Status screen Integrated Beacon Status screen Integrated Satellite Status screen Integrated SBAS Status screen Integrated RTK Radio Status screen
Plan	
Sensor	Sensor 1 Sensor 2
Comms	
UTC Time	
About	System Report

Setup section

Options	Connect to GPS Disconnect from GPS Reset GPS receiver Activate Integrated Satellite Connect to External Source Disconnect from External Source
Ext Source	
GPS	
Reload	
Change	
Lock	
Logging Settings	
GPS Settings	
Real-time settings	
Coordinate System	
Units	
External Sensors	

Tutorial

In this chapter:

- **Introduction**
- **Tutorial Scenario**
- **Preparing for Data Collection**
- **Data Collection**
- **Processing the Data**
- **Preparing for Data Update**
- **Data Update**

Introduction

This tutorial provides step-by-step instructions to help you master the main concepts and tasks involved in using the TerraSync software.

This tutorial uses the GPS Pathfinder Office software as the office processing software. For a tutorial that uses the GPS Analyst extension for ESRI ArcGIS software as the office processing software, refer to chapter 6, *GPS Analyst Extension Tutorials*, in the *GPS Analyst Extension Getting Started Guide*.

The tutorial is divided into five parts: three relate to data collection, and two relate to real-time data update.

Data collection:

- [Preparing for Data Collection, page 23](#)
- [Data Collection, page 26](#)
- [Processing the Data, page 37](#)

Data update:

- [Preparing for Data Update, page 49](#)
- [Data Update, page 56](#)

Note – You cannot update imported data files using the TerraSync Standard edition software.

Tutorial Scenario

The tutorial is based on the following scenario:

The Seaview Authority maintains a GIS of its street signs, streets, and neighborhood parks for inventory purposes. Information needs to be collected about each entity, indicating its condition and other important information. You and your field crew are responsible for collecting new data and updating the existing GIS data for Starfish Bay.

- [Data Collection \(see page 26\)](#)

In this part of the tutorial you collect new features. First, you create a GPS Pathfinder Office software project and prepare your equipment for data collection. Then you go to Starfish Bay where you record new features and their attributes. When you return to the office, you postprocess the data you collected, to achieve better positional accuracy for your results. Then you export the data to the Seaview Authority GIS.

- **Data Update (see page 56)**

In this part of the tutorial you update existing GIS data. Some time has passed since you collected the features, so you need to go back and update their attributes. Before going back to Starfish Bay, you import data from the Seaview Authority GIS into the GPS Pathfinder Office software, transfer it to your field computer, and prepare for data update. Finally, you return to the field and navigate to existing features to update their attributes. You use the TerraSync software and a real-time differential GPS source to navigate back to features and update their attributes.

Preparing for Data Collection

Before going to Starfish Bay to collect data, you need to create a new project in the GPS Pathfinder Office software. Then you need to check your equipment to make sure that you are ready to go out into the field.

This section provides step-by-step instructions that will prepare you for data collection. The topics are:

- **Creating a project (see page 24)**
- **The Seaview data dictionary (see page 25)**
- **Checking the equipment (see page 25)**


Creating a project

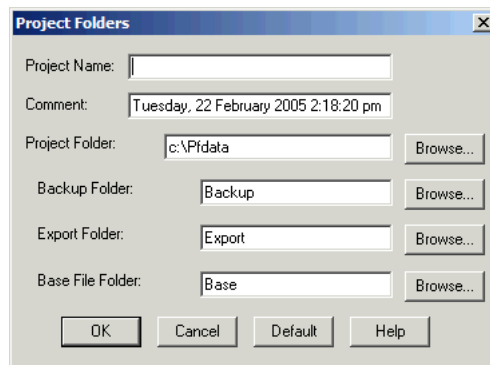
The GPS Pathfinder Office software provides a set of tools for processing and managing GPS and GIS data. The GPS Pathfinder Office software lets you plan your data collection session easily and process the GPS data successfully.

Use the GPS Pathfinder Office software to organize work into projects. Dividing the work in this way helps you manage your files. You can give all projects meaningful names, and assign separate folders for base, export, and backup files. You can also set up projects for different groups of data. For example, you could create a project for each subdivision in the city, or for each month.

For this tutorial, you need to create a new project called *TerraSync Tutorial*.

To create a project in the GPS Pathfinder Office software:

1. Click  on the Windows taskbar, and then select *Programs / GPS Pathfinder Office 3.10 / GPS Pathfinder Office*.
A Trimble identification screen appears while the program is loading. This is followed by the GPS Pathfinder Office application window.
2. By default, the *Select Project* dialog appears. If it does not appear, select *File / Projects*.
3. Click **New**. The *Project Folders* dialog appears:



4. In the *Project Name* field, enter **TerraSync Tutorial**, and then click **OK**.
The *Project Folder* field is updated to show the default folder for the new project.
5. Click **OK** again to close this dialog and create the new project.
6. In the *Select Project* dialog, TerraSync Tutorial is selected in the *Project Name* field. Click **OK** to open the new project.

For more information, refer to the *GPS Pathfinder Office Help*.

The Seaview data dictionary

A data dictionary contains a description of the features and attributes relevant to a particular project or job. It is used in the field to control the collection of a feature and its attributes.

The signs, roads, and parks in Starfish Bay that you need to map are *features*. The different types of information that you record for each type of feature are *attributes*. For example, the condition of a sign, or the name of a park, would be an attribute.

To ensure that the data you collect in the field is in the correct format for the Seaview Authority GIS, you need to use a data dictionary that contains the same features and attributes as the Seaview Authority GIS. The Seaview data dictionary has already been created for this purpose. When you installed the TerraSync software on your field computer, this file was automatically installed.

Checking the equipment

Before going out into the field with the TerraSync software, check that you have all the necessary GPS hardware, batteries, and cables.

The *TerraSync Software Release Notes* provide cabling diagrams for the **GPS receivers (see page 6)** that the TerraSync software can connect to.

Before you leave the office, Trimble recommends that you:

- set up your entire GIS/GPS data collection system and test it to make sure that everything is connected correctly
- make sure that the receiver and field computer batteries are charged
- make sure that the field computer and GPS receiver are communicating correctly



CAUTION – After testing the system, turn off the field computer and any other equipment (such as radios) before proceeding to the start point of your field work. Leaving equipment on wastes battery life, especially if it will be some time before you need to use the equipment.



Tip – When you turn off the field computer, any receiver that is connected to it is automatically turned off.

Data Collection

This part of the tutorial uses the Seaview data dictionary that is already installed on your field computer. You are ready to go to Starfish Bay and collect features. But first there are some tasks that you should complete. This section explains the tasks and gives the step-by-step instructions required to collect point, line, and area features, with a variety of different attributes. The topics are:

- [Initial tasks, page 27](#)
- [Collecting new data, page 30](#)


***Note** – To complete this part of the tutorial, you need to be outside, in a location where you can get good GPS signals. Some TerraSync screens may appear different from the screens shown in this tutorial.*

Initial tasks

Before starting a data collection session, you need to perform certain tasks when you arrive at the collection site. They are:

- [Switch on the field computer and start the TerraSync software, page 27](#)
- [Get a clear view of the sky, page 27](#)
- [Check the GPS status, page 28](#)
- [Configuring the GPS slider bar, page 29](#)

Switch on the field computer and start the TerraSync software

The GPS receiver should start automatically when you start the TerraSync software. Tap  and then select *Programs / TerraSync*. While the software is loading, a Trimble identification screen appears.

The Skyplot screen in the Status section appears after the identification screen.



Get a clear view of the sky

Move to a location where you have a clear view of the sky.

Signals can be received from any direction. Satellite signals can be blocked by people, buildings, heavy tree cover, large vehicles, or powerful transmitters. Anything that blocks light also blocks signals. GPS signals can go through leaves, plastic, and glass, but these all weaken the signal.

Check the GPS status

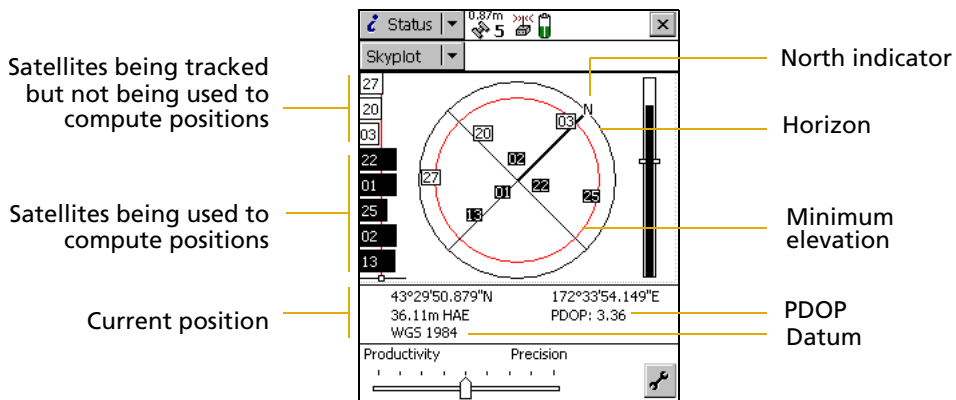
When you start the TerraSync software, it automatically connects to the GPS receiver and then begins to track visible satellites and to calculate its current position. Use the satellite icon on the status bar to check whether the receiver is computing GPS positions. This icon provides information about the geometry of the satellites that are being used to compute GPS positions.

Use the Status section to view the satellites currently tracked and those that are being used to calculate the current position.

For more information about satellite geometry and how this can affect GPS data collection, visit the Trimble website at www.trimble.com.

To view the GPS status:

1. The Skyplot appears when you first run the TerraSync software. If this screen is not visible, tap the Section list button and select Status. Then tap the Subsection list button and select Skyplot:



2. Use the skyplot to see which satellites are being tracked, and to see your current position.

Filled (black) boxes represent satellites that the receiver is using to compute its current GPS position. Unfilled (white) boxes represent satellites that the receiver is getting signals from but is not using

because the signals are too weak. In the above example, eight satellites are being tracked and five of these satellites are being used to compute GPS positions.

Note – Numbers with no box represent satellites that are available, but that the TerraSync software is not receiving signals from.

Your current GPS position is displayed at the bottom of the screen.



Tip – For detailed information on satellite positions and signal strengths, use the Satellite information screen in the Status section.

To compute a 3D GPS position, you need a minimum of four satellites with good geometry. When you switch on the receiver, it automatically starts to track visible satellites and to calculate its current position. If the receiver is computing GPS positions, the satellite icon in the Status bar and the number beside the icon are solid. If the satellite or its number are flashing, the satellite geometry is poor or there are too few satellites available to compute GPS positions. Adjust the GPS slider bar (see below) or wait until conditions are more favorable.

Configuring the GPS slider bar

You must configure some critical settings in the TerraSync software before you collect data (for example, the GPS settings). Configure these before leaving the office, or in the field. You can also set other (non-critical) settings to suit your application or preferences.

In this example, you will configure the GPS slider bar to best suit the environment of Starfish Bay.

Starfish Bay is an open area, with few tall buildings, trees, or other obstructions. Therefore, you need to adjust the GPS slider bar to allow better positions to be recorded. You will record fewer positions because you will restrict logging to locations when there is good satellite geometry, but the positions you record will have higher quality.

Note – By default, the GPS slider bar is set at the middle setting. When you adjust the GPS slider bar to the left, you can obtain positions in less favorable conditions that are less precise.

To configure the GPS slider bar:

1. Tap the Section list button, and then select Setup.
2. Tap **GPS Settings**. The GPS Settings form appears.
3. Drag the slider control to the right to raise the GPS slider bar two positions. This lets you collect fewer positions, but they will be more precise. Because there are few obstacles to block your view of

the sky, this may provide better overall results. If the slider bar is set too high, the precision of the positions collected is high, but there may be places in the Starfish Bay area that cannot be mapped.



Tip – Use a high precision setting on the GPS slider bar whenever a project requires the highest level of precision.

4. Tap **OK** to close the GPS Settings form.

For more information, see the *TerraSync Software Reference Manual*.

Collecting new data

Your supervisor has sent you to Starfish Bay to map new road signs, roads, and parks. This part of the tutorial gives step-by-step instructions for the following tasks:

- [Creating a new data file, page 31](#)
- [Collecting a point feature, page 32](#)
- [Collecting a line feature with Log Later, page 33](#)
- [Collecting an area feature, page 34](#)
- [Ending the data collection session, page 37](#)

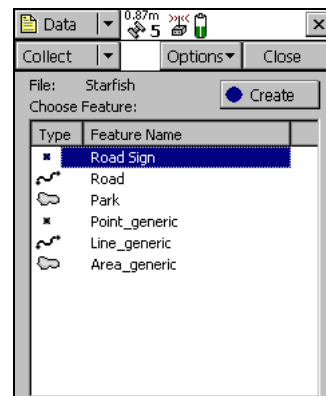
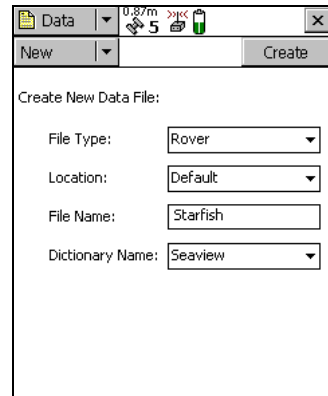
Creating a new data file

Before starting the data collection session, you need to create a new data file to store the new features and attributes you collect. Use the Data section to do this.

To create a new file:

1. Tap the Section list button, and then select Data.
2. Tap the Subsection list button, and then select New File. The New File screen appears.
3. The TerraSync software automatically enters a default name in the *File Name* field. Replace the default name with **Starfish**.
4. In the *Dictionary Name* field, make sure that the Seaview data dictionary is selected.
5. Tap **Create**.
6. The Confirm Antenna Height form appears. If necessary, enter the correct antenna height and measurement point, and then tap **OK**.
7. The Collect Features screen appears. This screen shows a list of all the features in the data dictionary.

You have created a new data file and can now start collecting features.



Collecting a point feature

The first new feature you need to record is a road sign. This is a point feature.

To record a point feature, you remain stationary while the TerraSync software logs GPS positions. These positions are averaged to compute the final GPS position of the point feature.

When the TerraSync software is logging GPS positions, the logging icon appears in the status bar. The number beside the icon indicates how many positions have been logged for the selected feature.

To record a point feature:

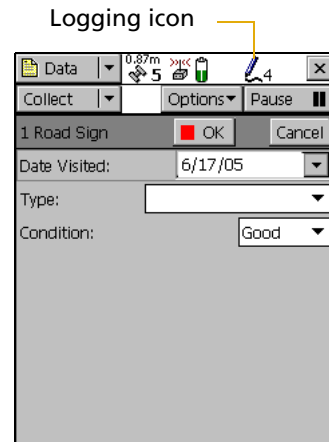
1. Make sure that the Collect Features screen is open. If it is not, tap the Section list button, select Data, and then tap the Subsection list button and select Collect Features.
2. In the *Choose Feature* list, highlight Road Sign, and then tap **Create**. The attribute entry form for the Road Sign feature type appears.

The *Date Visited* attribute is set to auto-generate on creation, so today's date is automatically filled in. You do not need to enter a value in this field.

3. From the list of options in the *Type* field, select Stop. These options are the values defined in the data dictionary.

This is a new sign, so its condition is good. Good is selected by default in the *Condition* field, so you do not need to change this field.

You have now recorded all the attribute information needed for the road sign.



4. As the software logs GPS positions, the counter beside the logging icon increments. When you have finished entering the attributes, tap **OK** to close the road sign feature.

The attribute entry form closes and you are returned to the Collect Features screen.

5. Later in the tutorial, you will navigate back to a sign that needs to be replaced, and update its attributes. You need to collect this road sign feature now. Repeat the above procedure to log another road sign feature. When you get to step 4, change the *Condition* field to Replace.

Collecting a line feature with Log Later

The next feature you need to record is a road. This is a line feature. To record a line feature, you need to travel along the line. As you do so, the TerraSync software records a GPS position at the configured logging interval, which defaults to the value that was set when the feature was created in the data dictionary. These positions are joined together to form a line.

By default, the TerraSync software begins logging GPS positions as soon as you open a new feature. You can use the Log Later option to delay logging of positions until you have entered the attributes for the feature, or until you reach the start of the feature.

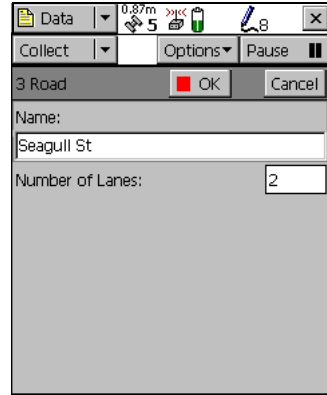
To record a line feature with the Log Later option:

1. Make sure that the Collect Features screen is open. If it is not, tap the Section list button and select Data, and then tap the Subsection list button and select Collect Features.
2. In the *Choose Feature* list, highlight Road.
3. Tap **Options** and select Log Later.
4. Tap **Create**. The Road attribute entry form appears.

You can record the attributes of the road before logging GPS positions

Note – When you use the *Log Later* option, the pause icon **||** flashes in the status bar to let you know that the TerraSync software is not logging GPS positions.

5. The *Name* field is already highlighted. Enter the name of the road, which is **Seagull St.**
6. Seagull Street has two traffic lanes. In the *Number of Lanes* field, enter the value **2**.
7. Move to the start of the road and tap **Log** to begin logging GPS positions for the road feature. The pause icon disappears from the status bar and the number on the logging icon increments as each position is recorded.
8. Continue down the road. When you reach the end of the line you are logging, tap **OK** to close the road feature.



Note – The *Log Now* and *Log Later* functions apply to all features you collect.

Collecting an area feature

Now you need to record the park in Starfish Bay. This is an area feature.

To record an area feature, you need to travel around the perimeter of the area. As you do so, the TerraSync software will log GPS positions at the logging interval set in the data dictionary. These positions are joined together to form the perimeter of the area.

The first and last GPS positions are joined together to close the area, so there is no need to return to the exact start point.

When you logged the road feature, you recorded the attributes before you started to log GPS positions. For the park feature, you will log GPS positions at the same time as you record the attributes.

To collect an area feature:

1. Make sure that the Collect Features screen is open. If it is not, tap the Section list button and select Data. Then tap the Subsection list button and select Collect Features.
2. Tap **Options** and select Log Now.
3. In the *Choose Feature* list, highlight Park.
4. Tap **Create**.

The attribute entry form for the Park feature opens, and the TerraSync software starts to log positions.

You can pause logging at any time. For example, if you are driving around the perimeter of the park and you want to stop and examine a sign some distance from the park, you can stop logging positions for the park boundary.

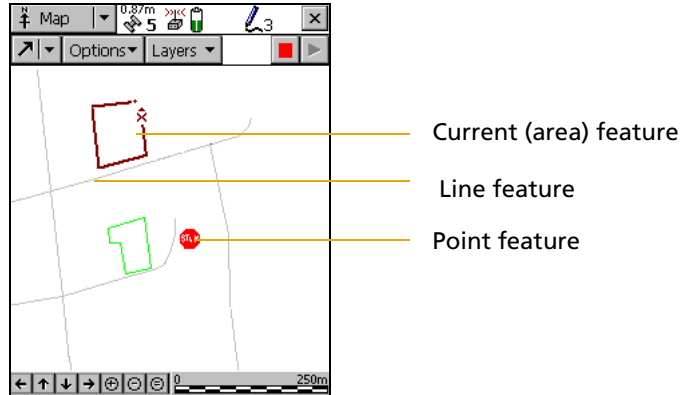
You can also pause logging if you want some time to enter attribute values.

The screenshot shows a mobile application interface. At the top, there is a status bar with a 'Data' dropdown, a distance of '0.87m', a speed of '5', and a '9' icon. Below this is a 'Collect' dropdown, an 'Options' dropdown, and a 'Pause' button with a double vertical bar icon. The main content area shows '4 Park' with a red square icon, and 'OK' and 'Cancel' buttons. Below that is a 'Name:' label followed by an empty text input field. At the bottom, there is a 'Restrooms?:' label followed by a dropdown menu currently showing 'Yes'.

5. To pause logging, tap **Pause**. The TerraSync software stops logging positions and a pause icon flashes in the status bar. To continue collecting the park feature, tap **Resume** to resume logging. The pause icon disappears.

For more information, see the *TerraSync Software Reference Manual*.

- You can view the map while collecting features. To do this, tap the Section list button and select Map. The features that you have collected are displayed on the map, along with the park perimeter that you are currently collecting.



You can view the map at different scales. To do this, tap the Zoom In or Zoom Out button on the Command bar.

Alternatively, tap the Map Tools list button, select Zoom In or Zoom Out, and then select the point on the map that you want to zoom in or out from.

Note – Your Map screen may appear different from the one shown.

- Tap the Section list button and select Data to go back to the Data section. The Park attribute entry form is still active and the TerraSync software is still logging positions for the park.
- Enter the park's attributes. In the Name field, enter **Starfish Park**, and from the *Restrooms?* field, select Yes.
- When you have walked around the perimeter of the area, tap **OK** to close the feature.



Tip – There are several advanced techniques that make data collection more efficient. For more information, see the *TerraSync Software Reference Manual*.

Ending the data collection session


When the data collection session is complete, close the data file and exit the TerraSync software.

To close the open data file and exit the TerraSync software:

1. Tap **Close** in the Collect Features screen.

A message appears, asking you to confirm that you want to close the open file.

2. Tap **Yes** to close the current data file and return to the New File screen.

3. Tap the Close button  in the upper right corner of the screen.

A message appears, asking you to confirm that you want to exit the TerraSync software.

4. Tap **Yes** to exit the TerraSync software.

Processing the Data

After the data collection session, use the GPS Pathfinder Office software to process the data collected and transfer it to the GIS.

This part of the tutorial shows you how to transfer and view the data. The tasks are:

- [Transferring data to the office computer, page 38](#)
- [Differentially correcting data, page 40](#)
- [Viewing data, page 46](#)
- [Exporting data to a GIS, page 47](#)

Transferring data to the office computer

You must transfer the data you collected in the field from the field computer to the office computer.

To transfer the Starfish Bay data file from the field computer to the office computer:

1. Switch on the field computer and the office computer and connect the two computers.
 - If the field computer is a CE device, the Microsoft ActiveSync® technology should automatically establish a connection with the CE device. When ActiveSync is connected to a CE device, the message **Connected** appears in the main ActiveSync window, and the ActiveSync icon in the taskbar is green.

If ActiveSync does not connect automatically, connect to the CE device manually. For information, refer to the ActiveSync Help or see the *TerraSync Software Reference Manual*.
 - If the field computer is a PC, make sure that there is a network connection between the PC and the office computer.
 - If the TerraSync software and the GPS Pathfinder Office software are installed on the same computer, you only need to turn on the computer.

2. In the GPS Pathfinder Office software, select *Utilities / Data Transfer*. The *Data Transfer* dialog appears.
3. From the *Device* list, select the appropriate device (GIS Datalogger on Windows CE or GIS Datalogger on Windows PC). Alternatively, if you have set up a device definition for the field computer, select that device name from the list.

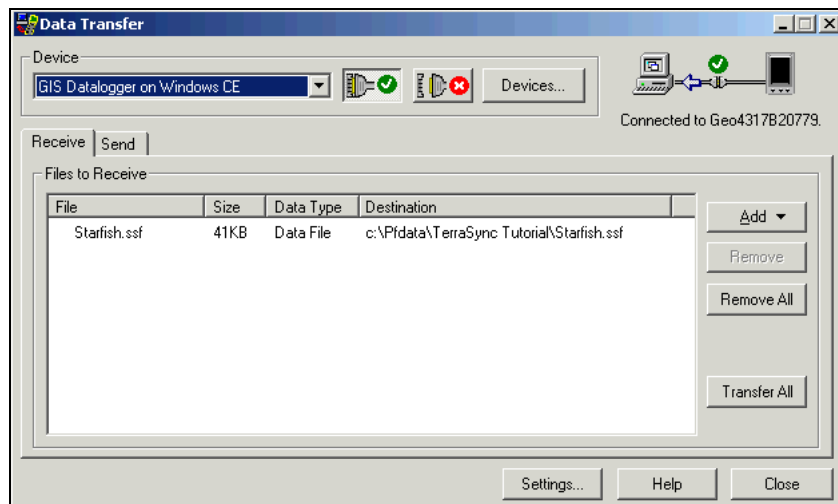
The Trimble Data Transfer utility automatically connects to the field computer.

4. Select the *Receive* tab.

- Click **Add** and select Data File from the drop-down list. The *Open* dialog appears.

Note – The files that appear are the files in the TerraSync data folder on the field computer.

- The Starfish file appears in the list of files. Highlight this file.
- Check that the Destination field shows C:\Pfddata\TerraSync Tutorial, then click **Open**. The *Open* dialog disappears and the Starfish file appears in the *Files to Receive* list.



- Click **Transfer All**. The data file is transferred to the desktop computer.
- A message box showing summary information about the transfer appears. Click **Close** to close it.
- Click **Close** to close the Data Transfer utility.

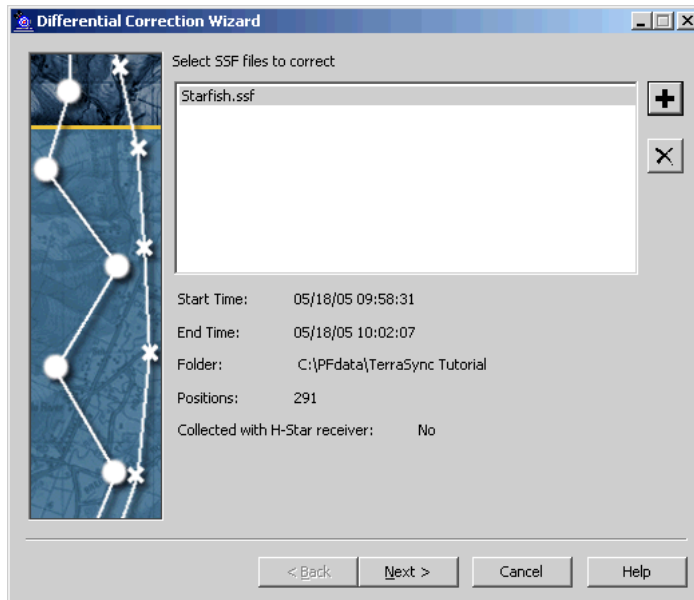
For more information, refer to the *GPS Pathfinder Office Help*.

Differentially correcting data

The data collected by GPS receivers is subject to errors, including small satellite clock errors, orbit errors, atmospheric noise, and multipath errors. The vast majority of these errors can be removed from the data by differential correction. Differential correction improves the accuracy of GPS positions to the specified accuracy of the receiver.

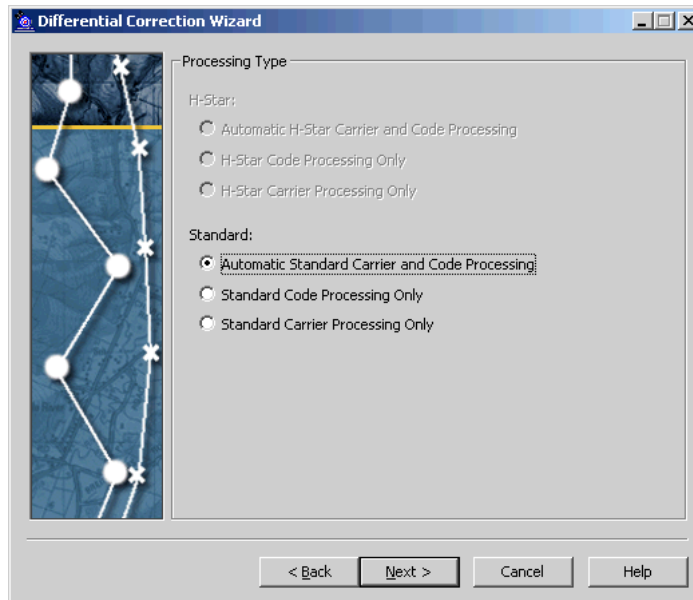
To differentially correct the data file:

1. Start the GPS Pathfinder Office software and open the TerraSync Tutorial project.
2. Select *Utilities / Differential Correction* to start the Differential Correction wizard. The file you transferred from the field computer should appear in the *Selected Files* field.



3. If it does not, click **+** to locate the file called Starfish.ssf and then click **Open**.

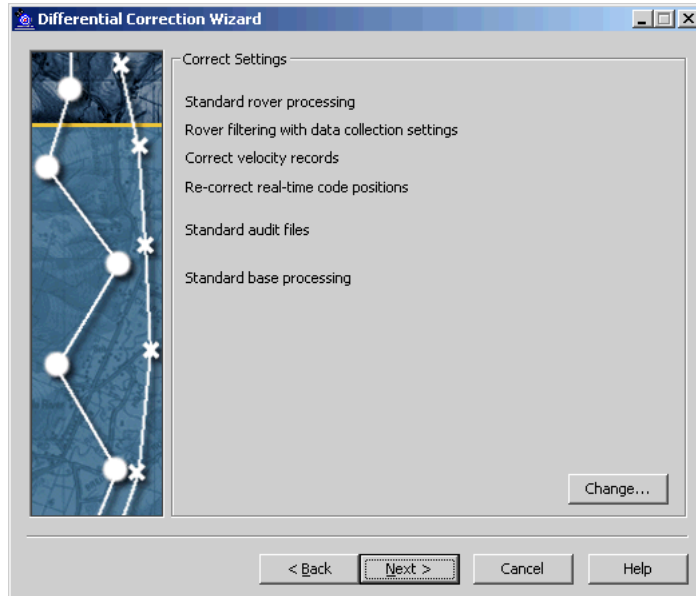
- Click **Next**. The *Processing Type* step appears.



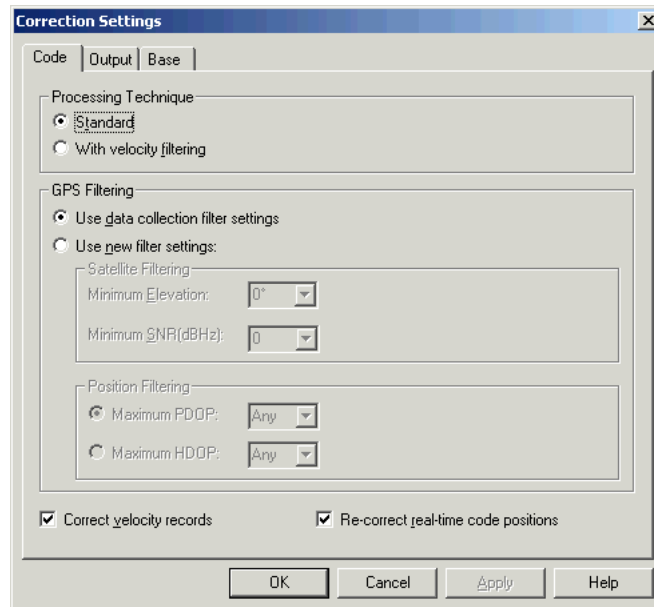
- Select a processing option. By default, the *Automatic Standard Carrier and Code Processing* option is selected.

Note – The *H-Star* processing options are only available if the GPS receiver used to collect the data file is *H-Star* capable. The tutorial data files were collected with a GPS receiver that is not *H-Star* capable.

- Click **Next**. The *Correct Settings* step appears. This step specifies the correction settings that will be applied.

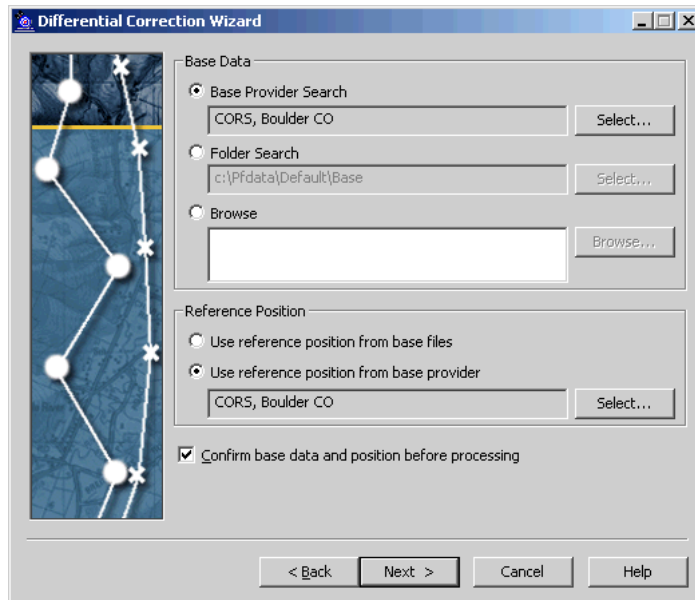


- To change the correction settings, click **Change**. You can change Code, Output, and Base settings in the *Correction Settings* dialog:



- We will use the default settings, so click **OK**.

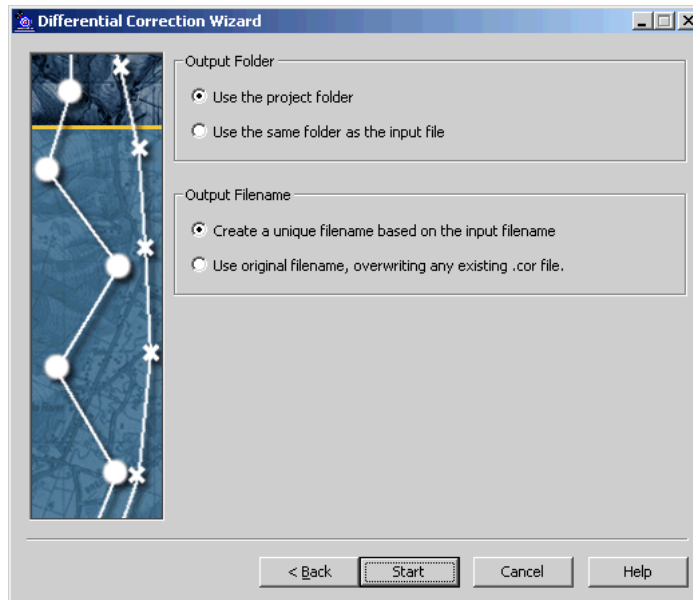
9. Click **Next**. The *Base Data* step appears.



This step enables you to:

- Specify the location of the base files.
By default, base files are stored in the base file folder of the current project on your local drive. To change the folder path, click **Browse**.
You can also search for the base data files on the Internet.
- Specify whether to use the reference position provided in the base station list, or the reference position in the base files. In general, the reference position in the base files is approximate and should not be used.
- Specify whether you want to confirm the processing details before starting differential correction. Select the *Confirm base data and position before processing* option to make sure that the selected base files provide coverage for the rover files and that the reference position is correct.

10. Click **Next**. The *Output Folder* step appears.



This step enables you to specify the output folder and output filename. Use the default settings shown above.

11. Click **Start** to differentially correct the selected files.
12. The *Progress* step details the results of the differential correction. If you selected the *Confirm base data and position before processing* option, the **Confirm** button becomes available when the base files have been downloaded or located. Click **Confirm** to proceed with processing.
13. When processing is complete, click **Close** to close the Differential Correction wizard.

For more information about differentially correcting data, refer to the *GPS Pathfinder Office Help*.

Viewing data

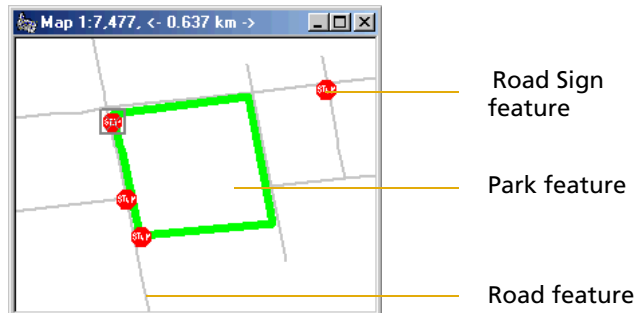
When the data has been transferred and differentially corrected you can display, edit, and plot it using the GPS Pathfinder Office software. The GPS Pathfinder Office software's Map window is the best way to view field data and to verify its integrity. Use it to make graphical queries and measurements on the collected data. You can specify the colors, symbols, and line styles for each feature.

To view the data:

1. In the GPS Pathfinder Office software, select *File / Open*. Select the Starfish.cor file from the current project folder (C:\Pfddata\TerraSync Tutorial).

Starfish.cor is the differentially corrected version of the file Starfish.ssf, which you transferred from the field computer.

2. If the Map window is not visible, select *View / Map*:

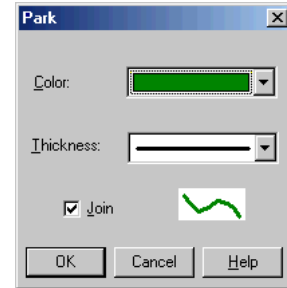


The Map window displays the selected file.

Note – *Your Map window may appear different from the one shown.*

3. To display the attributes of any feature on the map, double-click the feature. The *Feature Properties* dialog appears. It provides attribute information about the selected feature.

4. Change the color of the Park feature:
 - a. Right-click the Park feature on the map.
 - b. From the shortcut menu that appears, select Park Layer Style.
The *Park* dialog appears.
 - c. Use this dialog to change the color of the Park area feature type to green.



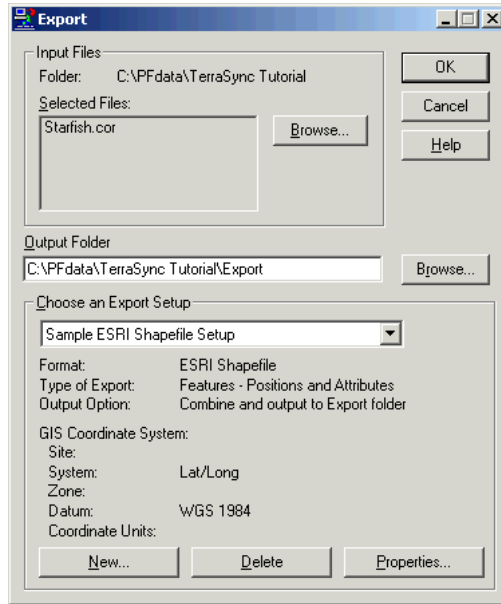
For more information about the GPS Pathfinder Office software Map window display, refer to the View menu topic in the *GPS Pathfinder Office Help*.

Exporting data to a GIS

The Trimble Export utility in the GPS Pathfinder Office software converts files that are in SSF format into a format that can be read by a GIS, CAD, or database system. It lets you export point, line, and area features, attributes, and positions to a variety of other formats.

To export data to a GIS:

1. In the GPS Pathfinder Office software, select *Utilities / Export* to start the Export utility:



2. The file Starfish.cor is displayed in the *Selected Files* field. If it is not, click **Browse** to display the *Open* dialog. Browse for Starfish.cor, highlight it, and click **Open**.
3. Select the output folder. By default, this is the export folder in the current project.
4. In the *Choose an Export Setup* group, select Sample ArcView Shapefile Setup.
5. Make sure that the *GIS Coordinate System* group shows the Latitude/Longitude coordinate system. If the coordinate system is incorrect, click **Properties**, then select the *Coordinate System* tab in the *Export Properties* dialog to change the coordinate system. Click **OK** when you have finished.

6. Click **OK** to export the selected file(s) using the specified export setup.
7. The *Export Completed* dialog details the results of the export. Click **Close** to close this dialog.
8. The file is now in the format required by your GIS. You can now open it in your GIS.



Tip – The Batch Processor utility increases productivity by letting you automate repetitive tasks that you do when you return to the office, such as data transfer, differential correction, and export to your GIS. When you come back from the field, simply connect the field computer to the office computer. The Connection Manager utility automatically recognizes that a field computer is connected and runs the Batch Processor utility.

For more information about these utilities, refer to the *GPS Pathfinder Office Help*.

Preparing for Data Update

Note – *You cannot update imported data files if you have the TerraSync Standard edition software installed.*

A year has passed and it is necessary to return to Starfish Bay to check the condition of the road signs. A different field crew is going to do this. The TerraSync software and a real-time correction source will be used to navigate to each sign, and the Seaview data dictionary will be used to verify and update the attributes for those features.

This part of the tutorial gives step-by-step instructions that should be followed before you go into the field to update data:

- [Creating a data dictionary from existing data files, page 50](#)
- [Importing data from a GIS into the GPS Pathfinder Office software, page 51](#)
- [Transferring data to the field computer, page 54](#)

Creating a data dictionary from existing data files

***Note** – This step is only necessary for the tutorial. Normally, before collecting any data, you would create a data dictionary on a desktop computer, and then use the Trimble Data Transfer utility to copy the data dictionary to the field computer. Alternatively, you would create a data dictionary in the TerraSync software.*

Before you can import data from a GIS, you need to recreate the Seaview data dictionary on the desktop computer.

Each SSF file contains a copy of its associated data dictionary. You will use the Starfish data file to recreate the Seaview data dictionary that is on the field computer.

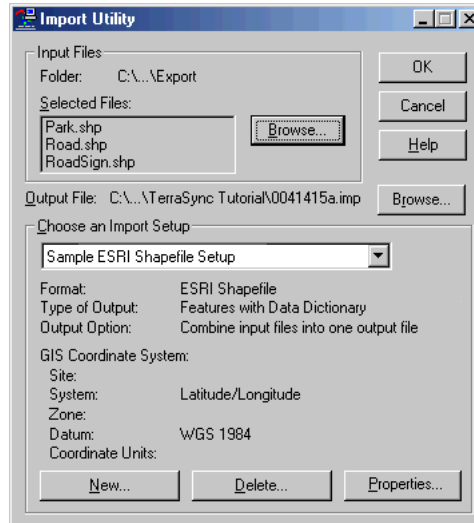
To create a data dictionary from a data file:

1. Start the GPS Pathfinder Office software and open the TerraSync Tutorial project.
2. Start the Data Dictionary Editor utility. In the GPS Pathfinder Office software, select *Utilities / Data Dictionary Editor*. The main *Data Dictionary Editor* window appears.
3. Select *File / Import From Data File*. The *Import From Data File* dialog appears.
4. Highlight the Starfish.ssf file and click **Open**.

The *Import From Data File* dialog closes and you are returned to the main *Data Dictionary Editor* window where a new, unsaved data dictionary has been created.

5. Select *File / Save*. The *Save As* dialog appears. The default filename for the new data dictionary is Seaview.ddf.
6. Change to the C:\Pfddata directory and click **Save**.
7. In the *Data Dictionary Editor* window, select *File / Exit*.

Importing data from a GIS into the GPS Pathfinder Office software



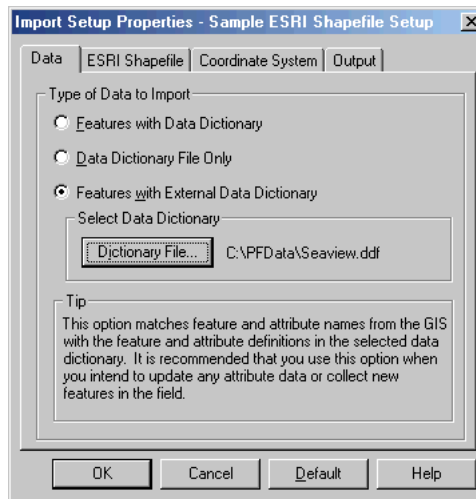
Before going into the field, transfer the required information from the GIS to the TerraSync software. The Import utility in the GPS Pathfinder Office software converts data from a GIS data format into the SSF format required by the TerraSync software. The Trimble Data Transfer utility in the GPS Pathfinder Office software lets you transfer data between the office computer and the field computer.

This part of the tutorial outlines how to transfer GIS data to a field computer that is running the TerraSync software.

To import GIS data into SSF format:

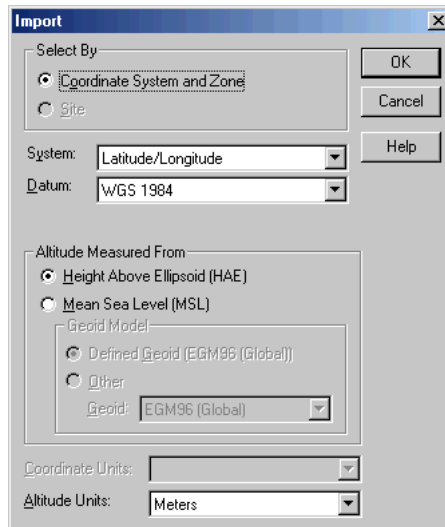
1. Start the GPS Pathfinder Office software and open the TerraSync Tutorial project.
2. Start the Import utility. In the GPS Pathfinder Office software, select *Utilities / Import*. The *Import Utility* dialog appears.

3. The three Shapefiles that you exported at the end of the data collection part of the tutorial appear in the *Selected Files* list. If they do not appear, click **Browse** and locate the folder C:\PFdata\TerraSync Tutorial\Export. Select the input files RoadSign.shp, Road.shp, and Park.shp, and then click **Open**.
4. In the *Choose an Import Setup* group, make sure that Sample ESRI Shapefile Setup is selected.
5. Change the import setup properties:
 - a. Click **Properties**. The *Import Setup Properties - Sample ESRI Shapefile Setup* dialog appears. Make sure that the *Data* tab is selected.



- b. In the *Type of Data to Import* group, select the *Features with External Data Dictionary* option.
- c. Click **Dictionary File**. Browse for the Seaview.ddf file, highlight it, and click **Open**.
- d. Select the *Coordinate System* tab and click **Change** to change to the coordinate system the GIS data uses. You must import GIS data using the same coordinate system that the GIS data is already stored in.

- e. Make sure that Latitude/Longitude is selected in the *System* field, and that WGS 1984 is selected in the *Datum* field:



- f. Click **OK** to return to the *Import Setup Properties* dialog.
- g. Select the *Output* tab.
- h. In the *Output* group, make sure that the *Combine input files into one output file* option is selected.
- i. Click **OK** to return to the *Import* dialog.
6. Click the **Browse** button beside the *Output File* field. The *Specify Output File* dialog appears. The default filename is in the format YMMDDHHR.imp.

Note – A .imp file is a file in SSF format that was created by importing from a GIS, CAD, or spatial database. It is the same as an .ssf file, but has a different filename extension to distinguish it from data files created in the field.

7. In the *File Name* field, enter **Starfish.imp** and then click **Save**.
8. Click **OK** to import the file.

9. A message appears, showing information about the import. Click **Close** to close the message box.

For more information, refer to the *GPS Pathfinder Office Help*.

The file Starfish.imp is created from the selected Shapefiles. The next step is to transfer this file to the field computer.

Transferring data to the field computer

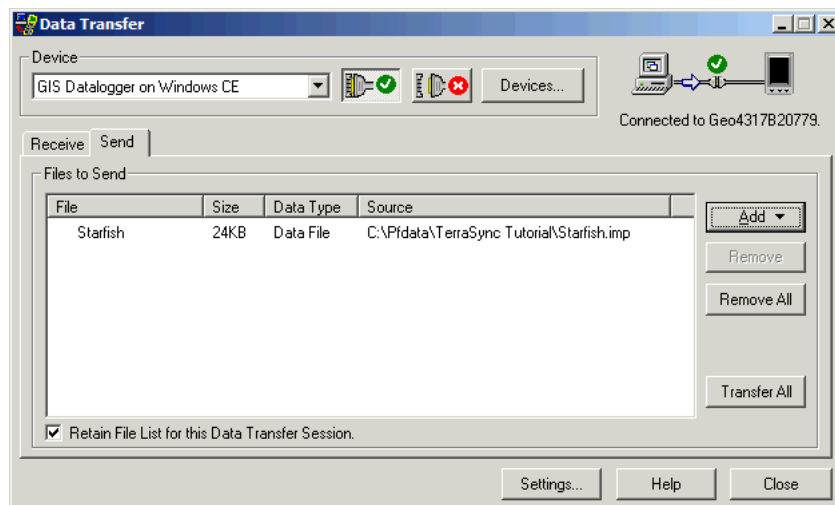
You need to transfer the imported Starfish data file to the field computer, so that you can use it in the field to update existing data. Use the Trimble Data Transfer utility in the GPS Pathfinder Office software to efficiently transfer data between the office computer and a field computer running the TerraSync software.

To transfer files from the office computer to the field computer:

1. Switch on the field computer and the office computer and connect the two computers.
 - If the field computer is a CE device, the ActiveSync technology should automatically establish a connection with the CE device. When ActiveSync is connected to a CE device, the message **Connected** appears in the main ActiveSync window, and its taskbar icon is green.

If the ActiveSync technology does not connect automatically, connect to the CE device manually. For information, refer to the ActiveSync Help or the *TerraSync Software Reference Manual*.
 - If the field computer is a PC, make sure that there is a network connection between the PC and the office computer.
 - If the TerraSync software and the GPS Pathfinder Office software are installed on the same computer, you only need to turn on the computer.
2. In the GPS Pathfinder Office software, select *Utilities / Data Transfer*. The *Data Transfer* dialog appears.

3. From the Device list, select the appropriate device (GIS Datalogger on Windows CE or GIS Datalogger on Windows PC). Alternatively, if you have set up a device definition for the field computer, select that device name from the list. The Data Transfer utility automatically connects to the field computer.
4. Select the *Send* tab. Click **Add** and select Data File from the drop-down list. The *Open* dialog appears.
5. The Starfish.imp file appears in the list of files. Highlight it and click **Open**. The *Open* dialog disappears, and the Starfish data file appears in the *Files to Send* list:



6. Click **Transfer All**. The data file is transferred to the field computer. A message showing summary information about the transfer appears.
7. Click **Close** to close the message box.
8. To close the Data Transfer utility, click **Close**.
9. To close the GPS Pathfinder Office software, select *File / Exit* in the main GPS Pathfinder Office window.

For more information, refer to the *GPS Pathfinder Office Help*.

Data Update

Note – You cannot update imported data files using the TerraSync Standard edition software.

This part of the tutorial uses the data file that you have just transferred to the field computer. You are ready to go to Starfish Bay and update features. This section gives the step-by-step instructions required to navigate back to features, and to update features:

- [Using real-time differential GPS](#)
- [Updating data, page 59](#)

Using real-time differential GPS

You can use real-time differential GPS to navigate accurately to existing features. Use the Navigation section or the Map section to navigate back to a selected feature.

Topics in this section are:

- [Sources of real-time differential corrections, page 57](#)
- [Logging postprocessable positions, page 57](#)
- [Checking the real-time status, page 58](#)

Sources of real-time differential corrections

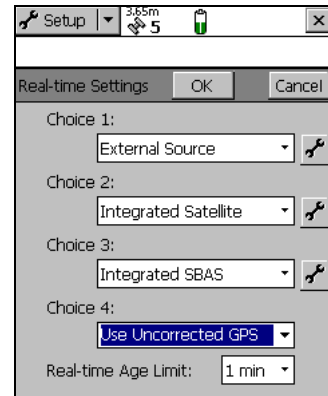
You can get real-time corrections from any of the following sources:

- Integrated beacon receiver
- Integrated satellite receiver
- Integrated SBAS receiver
- Integrated RTK radio
- External source, such as VRS, data radio, or external beacon receiver

You can specify up to four choices for real-time corrections. If your first choice is not available, the TerraSync software automatically uses the second choice until the first choice is available again. This occurs at all levels, so the TerraSync software uses your preferred correction source at all times.

If you cannot use real-time corrections, or do not want to use them, set the first choice to Use Uncorrected GPS. No corrections will be applied to your data.

Use the Setup section to configure the real-time correction sources you want to use.



Logging postprocessable positions

When you use a real-time differential correction source, there may be times when you cannot receive corrections. Any positions logged during these times are uncorrected, and are subject to errors which degrade their accuracy.

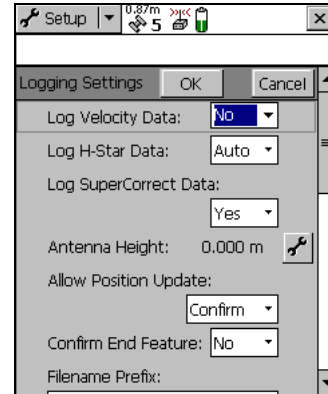
If you log SuperCorrect™ data, you can receive real-time corrections, but you can also postprocess your data in the GPS Pathfinder Office software to improve the accuracy of the real-time corrected positions.

To log SuperCorrect data:

1. Tap the Section list button and select Setup.
2. Tap **Logging Settings**. The Logging Settings form appears.
3. In the *Log SuperCorrect Data* field, select Yes.
4. Tap **OK** to close the form.

Note – Logging SuperCorrect data takes up more storage space.

Note – You cannot postprocess RTK data collected using a survey receiver.



Checking the real-time status

Always check the real-time status before navigating back to existing features.

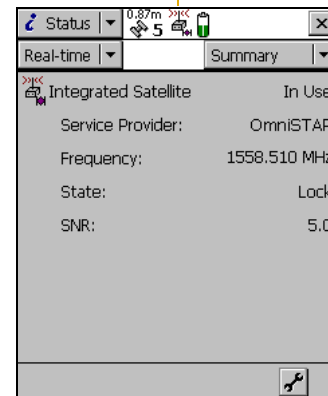


Tip – Use the status bar to quickly check the real-time status. When the TerraSync software is receiving real-time corrections, a real-time icon appears in the status bar. The icon flashes if there is a problem with the real-time source.

Use the Status section to view detailed information about the real-time status. Tap the Section list button and select Status. Then tap the Subsection list button and select Real-time. The Real-time Summary screen appears.

Use this screen to check that the TerraSync software is receiving corrections. When the TerraSync software is receiving corrections, a real-time icon appears beside the source in use. This icon indicates the type of correction source.

Real-time icon



Updating data

Your supervisor has sent you to Starfish Bay to update information on existing signs.

As you did not record the original road signs you do not know exactly where they are. Use the TerraSync software and a real-time source (if it is available) to navigate to them.

This part of the tutorial gives step-by-step instructions for the following tasks:

- [Opening an existing data file](#)
- [Filtering features, page 60](#)
- [Selecting a target in the Data section, page 61](#)
- [Navigating to a target in the Navigation section, page 62](#)
- [Updating a feature, page 63](#)
- [Selecting a target in the Map section, page 65](#)
- [Navigating to a target in the Map section, page 66](#)
- [Marking a feature as updated, page 67](#)
- [Closing the file, page 68](#)

Opening an existing data file

Before starting the data update session, open the file that contains the GIS data. Use the Data section to do this.

To open an existing file:

1. Tap the Section list button and select Data.
2. Tap the Subsection list button and select Existing File.
3. Highlight the Starfish file. This is the file you imported earlier from the Seaview Authority GIS.
4. Tap **Open**.

The Update Features screen appears. This screen shows a list of all existing features in the data file.



You have opened a data file, so you can now start updating features.

Filtering features

Your first data update task is to locate any road signs that need to be replaced by your field crew.

To make it easy to see which signs you need to visit, you will use filtering to group the features, then select the features you want to update from the filtered group.

You can filter features by their:

- update status
- deletion status
- feature type
- attribute values

The road signs you want to filter have the value Replace in the Condition attribute. To show only these signs, you need to filter by attribute value on the feature type Road Sign.

To filter features:

1. In the Data section, open the Update Features screen. Tap the Subsection list button and choose Update Features.
2. Tap **Options** and select Filter. The Filter By form appears.
3. Make sure that the *Features* check box is selected.
4. In the *Road Sign* field, select Filter By. The *Attribute*, *Test*, and *Value* fields appear below the *Road Sign* field.
5. In the *Attribute* field, select Condition.
6. In the *Test* field, make sure that Equal To is selected.
7. In the *Value* field, select Replace.
8. Tap **OK**. The Filter By form closes and you are returned to the Update Features form.


If a feature in the *Choose Feature* list meets the conditions you specified, the filter icon () appears in the Filter column for that feature. There should only be one road sign that meets the filtering conditions.

Selecting a target in the Data section

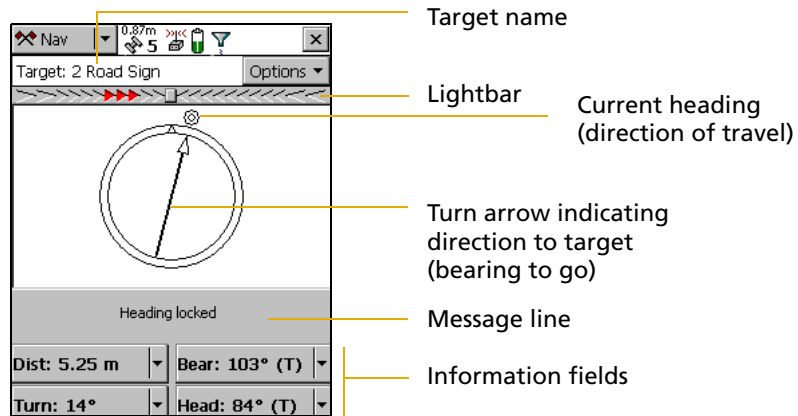
Now that you have filtered the list of features, you can visit each feature displayed and update its attributes. Use the Navigation section to locate an existing feature.

To navigate to a feature, select it as your target. Do this using the list of existing features.

To select a target:

1. In the Update Features screen, highlight the filtered road sign.
2. Tap **Options**.
3. Select Set Nav Target. The target icon  appears beside the selected feature. This icon replaces the point icon.

Navigating to a target in the Navigation section




1. To open the Navigation section, tap the Section list button and select Navigation. The Direction Dial screen appears.
2. Use the information displayed on the Direction Dial screen to navigate to the selected target.

This screen displays all the information that you need to navigate to the target. The information fields at the bottom of the screen display different types of navigational information.

To navigate to the selected target, start moving. This enables the TerraSync software to calculate your initial heading. When the direction dial shows the turn arrow, keep moving and turning until the arrow points to the top of the screen. The top of the screen indicates your current heading. Then move towards the target, adjusting your direction to ensure you are always heading toward the target.

Note – *If you are moving very slowly, or are stationary, the direction dial is not updated. The message **Heading locked** appears.*

When you are within a few meters of the target, the view switches to the Close-up screen. In the Close-up screen, your position is indicated by the cross **X** and the target is represented by the bull's-eye .

As you move closer to the target, the position symbol gets closer to the target symbol. You have reached the target when the position symbol is over the top of the target symbol.



Tip – In the Close-up screen, your heading is not updated. It is best to face in the same direction that you have been moving in originally and move sideways, backward, or forward, rather than turn.

Updating a feature

You have opened the existing file and navigated to the road sign feature. Now you can edit the attributes.

To update the attributes for a feature:

1. Tap the Section list button and select Data, then tap the Subsection list button and select Update Features.

The Update Features screen appears.

2. The road sign you navigated to should be the highlighted feature in the list. If it is not, select it.

3. Tap **Begin** to display the attribute entry form for this feature. Use this form to update the attributes for the sign.

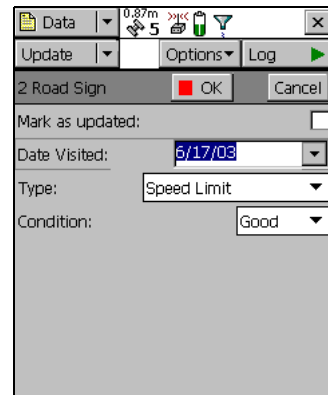
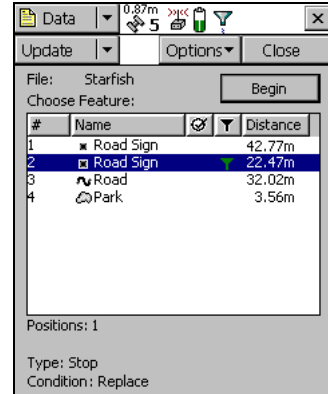
The *Date Visited* attribute has been set up to auto-generate on update. As soon as you make any change to the feature's attributes or position, this attribute is automatically updated with today's date.

4. The next attribute is the sign type. Use the *Type* attribute to verify that you are updating the correct sign. Check that the real sign matches the type recorded in the TerraSync software.



5. You and your field crew have replaced the damaged sign, so in the Condition field change the selected option from Replace to Good.

6. Tap **OK** to save the attribute changes and return to the Update Features screen.

For more information, see the *TerraSync Software Reference Manual*.





Tip – In the Update Features screen, the Updated column of the *Choose Feature* list shows the update status of each feature. Any feature that has been transferred from the GPS Pathfinder Office software has an empty circle  in this column. When a transferred feature is updated, a check mark appears in the circle .

Selecting a target in the Map section

Finally, you need to revisit the Road feature called Seagull Street. You will use the Map section to navigate to the beginning of Seagull Street.


Note – Your Map screen may appear different from the one shown.

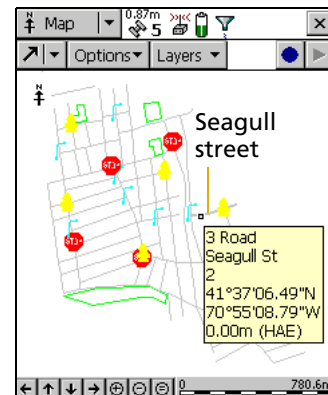
To select a target using the Map section:

1. Tap the Section list button and select Map.
2. If necessary, zoom in or out until all the features in the data file are visible.
3. The Seagull Street feature is the only line feature on the map. Tap any part of the line feature to select it.

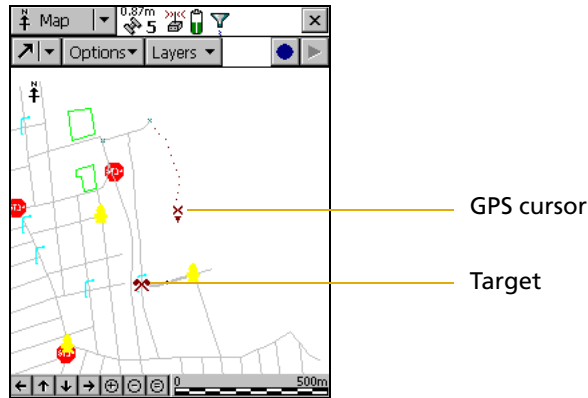
A selected line feature has a wider line than an unselected line feature.

When you select a feature, a tooltip appears. The tooltip shows the feature's number, name, and position.


4. Tap **Options** and select *Set Nav Target*. The target icon  appears at the start point of the selected road.




Navigating to a target in the Map section



Note – Your Map screen may appear different from the one shown.

Once you have selected a target from the map, you can use the map to guide you to this target. The GPS cursor  shows your current position and heading.

To navigate to the target, make sure that the heading arrow on the GPS cursor points towards the target as you move.

You may need to use zooming or panning to ensure that both the target and the GPS cursor are visible. When the target is not visible, the bearing arrow  at the edge of the map shows its direction.

When the GPS cursor lies over the target icon, you have successfully navigated to the target.

Marking a feature as updated

You have navigated to the road feature. Now you can check its attributes and change its status to Updated.

To mark a feature as updated:

1. Make sure that the Map section is active. If it is not, tap the Section list button and select Map.

The road you navigated to should be the highlighted feature.

2. Double-tap the road feature to display its attribute entry form.

***Note** – If the attribute entry form appears briefly then disappears after you double-tap a feature, and you are using the desktop version of the software, your mouse pointer may be configured to snap to the default control. This setting prevents double-tapping from working correctly. To disable this option, select the Mouse option in the Windows Control Panel, select the Motion tab, and clear the Snap mouse to default button in dialogs check box.*

3. All attribute values are correct, so you do not have to make any changes. Instead, select the *Mark as updated* check box.
4. Tap **OK**. The attribute entry form closes and you are returned to the Map section.

When you change an existing feature's attributes, offset, or GPS position, the feature's status automatically changes to Updated, and the *Mark as updated* check box is selected.

When you manually select the *Mark as updated* check box, the TerraSync software changes the feature status only. It does not change any attributes, offsets, or positions. Use the Mark as updated function to indicate the features that you have visited but have not changed.

The screenshot shows a dialog box for editing a road feature. At the top, there is a 'Data' dropdown menu and a status bar showing '0.87m' and '5'. Below this is a toolbar with 'Update', 'Options', and 'Log' buttons. The main title of the dialog is '3 Road', with 'OK' and 'Cancel' buttons to its right. The form contains the following fields:


- 'Mark as updated:' with a checked checkbox.
- 'Name:' with a text input field containing 'Seagull St'.
- 'Number of Lanes:' with a numeric input field containing '2'.

 The background of the dialog is a light gray color.

Closing the file

When the data update session is completed, exit the TerraSync software. You do not have to close the data file first. If you exit the software while a data file is still open, the TerraSync software closes the file before exiting.

To exit the TerraSync software:

1. Tap the **Close** button  in the upper right corner of the screen. A message appears, asking you to confirm that you want to close the file and exit the software.
2. Tap **Yes**.

User Interface and Data Entry

In this chapter:

- **Introduction**
- **Getting Help**
- **Windows Operation**
- **Windows CE Operation**
- **Starting and Exiting the TerraSync Software**
- **Section Structure**
- **The TerraSync Software Display**
- **Status Bar**
- **Interacting with the TerraSync Software**


Introduction


This section contains detailed information about the TerraSync software user interface and data entry methods.

Getting Help

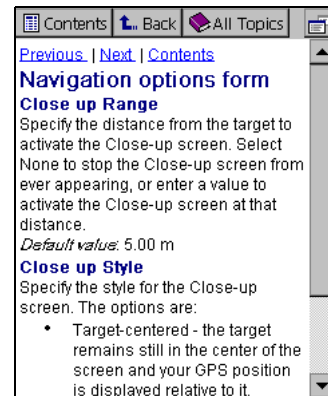
The *TerraSync Software Online Help* describes only the fields and commands for each screen. For detailed information about using the TerraSync software, refer to the *TerraSync Software Getting Started Guide* (this document) or the *TerraSync Software Reference Manual*.

To access context-sensitive Help, do one of the following:

- when using a Pocket PC or an H/PC 2000, tap  and select *Help*
- when using a PC, press **F1**
- when using a field computer with a physical keyboard, you can also hold down the **[Alt]** key on the keyboard and then press **[H]**

If you tap  and select *Help* on an H/PC 2000, or on a Pocket PC when the TerraSync software is not running, the main Help Contents appears.


Online Help for the TerraSync software is displayed in HTML pages. It works in the same way as a Web page. Select any blue underlined text to jump to the topic it describes.

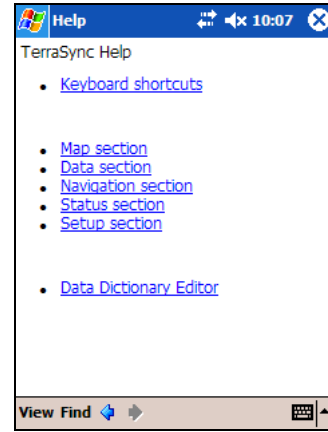


The contents page of the *TerraSync Software Online Help* lists all the main topics. To access this page, do one of the following:

- Select the Contents link at the top of any Help page.
- While viewing the Help on a Pocket PC, tap **View** and select *Contents*.
- While viewing the Help on an H/PC 2000, tap **Contents**.
- From the main Help Contents topic on a CE device, select the TerraSync link.

On a CE device, the main Help Contents topic lists all the Help files that are available. To access this page, do one of the following:

- While viewing the Help on a Pocket PC, tap **View** and select *All Installed Help*.
- While viewing the Help on an H/PC 2000, tap **All Topics**.
- If the TerraSync software is not running, tap  and select *Help*.



Windows Operation

You can install the TerraSync software on a desktop, laptop, or Tablet PC instead of on a CE device. This manual assumes that you are familiar with the Microsoft Windows operating system that is installed on the PC.

This manual describes the TerraSync software as it appears on a portrait orientation Handheld PC 2000 with a 240 × 320 pixel screen (see [Documentation Conventions, page 3](#)). On a PC, some elements of the software are displayed differently. The main difference is that on a larger screen the the TerraSync software display is arranged in panes, so you can view up to three sections at the same time (see [Panels, page 14](#)). For more information, see the *TerraSync Software Reference Manual*. However, the CE device and PC display functions in the same way.

Except where specified, any information in this manual that relates to the operation of the TerraSync software on a CE device also applies to its operation on a PC.

Windows CE Operation

This manual assumes that you are reasonably familiar with the Microsoft Windows CE operating system. If you have used a Windows operating system such as Microsoft Windows 2000 or Windows XP, you will know how to use most Windows CE features. For help on Windows CE operation, select *Help* from the *Start* menu on the CE device.

The following topics contain information about some Windows CE features that are essential to the TerraSync software:

- [Changing memory allocation, page 73](#)
- [Adjusting the screen contrast, page 74](#)
- [Working with other applications, page 75](#)
- [On-screen keyboards, page 76](#)
- [Device Lock utility, page 78](#)

The following topics contain information that is specific to Trimble field computers:

- [GeoExplorer series handheld, page 79](#)
- [TSCe field device, page 81](#)
- [Trimble Recon handheld, page 82](#)

Changing memory allocation

Most CE devices have a relatively small amount of random access memory (RAM), which is divided between *storage memory* and *program memory*. You can adjust the amount of available memory that is allocated to each.

Storage memory, like a hard disk on a desktop computer, is used to store files on the CE device. If you do not have enough space on the CE device, you can increase the storage memory to provide space for more files.


Program memory is used to run programs. If programs are running slowly, or the CE device displays messages warning you that program memory is low, you can increase the program memory.

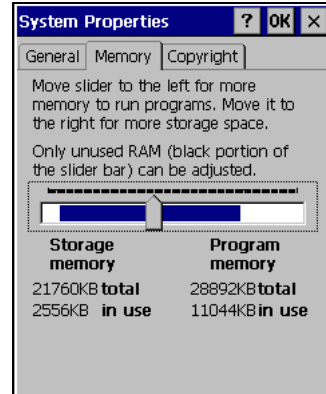
Note – *You can only change the allocation of memory that is not currently in use.*



Tip – If the CE device does not have any internal secondary storage, check the slider position regularly to ensure that the memory allocations are appropriate. Normally, you should allocate as much memory as possible to running programs. For example, if you delete files from the CE device or transfer them to the office computer, you should convert the free space to program memory. This optimizes the performance of the programs you are running. As you collect more data, check that there is sufficient storage space allocated, and increase it if necessary.

To adjust the memory allocation:

1. On the Windows CE taskbar, tap .
2. Do one of the following:
 - On a Pocket PC, select *Settings / System*.
 - On a Handheld PC 2000 (H/PC 2000), select *Settings / Control Panel / System*.
3. Select the *Memory* tab.
4. Drag the slider to the left to increase program memory, or to the right to increase storage memory.
5. Tap **OK** to close the *System Properties* dialog.



Adjusting the screen contrast

You can change the screen contrast on any CE device, to adjust to indoor or outdoor operation. Many CE devices have settings software and a hardware control for adjusting the contrast in bright or dim light. For information on changing device settings, or on locating and using hardware controls, refer to the documentation for the CE device.


Some CE devices, such as the [GeoExplorer series handheld \(see page 79\)](#) or the [Trimble Recon handheld \(see page 82\)](#), have a frontlight or backlight instead of contrast control. For information on changing the lighting level, refer to the documentation for the CE device.


Working with other applications

The Windows CE operating system used by H/PC 2000 devices is similar to a desktop Windows operating system. You can use the same methods on an H/PC 2000 device as you would on a Windows computer to start, exit, or switch between programs. For example, to switch from the active application to another application, you can tap the program's icon in the taskbar. Alternatively, if the CE device has a keyboard, you can use the **[Alt] + [Tab]** key combination.

On Pocket PCs, most programs do not have a close button or a menu command for exiting the program. Instead, you must use system software to shut down a particular program. If the CE device does not have a keyboard, you must also use system software to switch from the active application to another application.

To shut down or switch to a task that is running on a Pocket PC:

1. On the Windows CE taskbar, tap .
2. Select *Settings / System*.
3. Select the *Task Manager* tab.
4. Highlight the task you want, then do one of the following:
 - To shut down the task, tap **End Task**.
 - To switch to the selected task, tap **Switch To**.
5. Tap **OK** to close the *System Properties* dialog.

When the TerraSync software is already running on a CE device, tapping  / *Programs / TerraSync* does not start the software a second time. Instead, the copy of the TerraSync software that is already open becomes the active program. You can use this method to switch back to the TerraSync software from another application.





Tip – Some CE devices have hardware buttons that start specific applications. You may be able to change the program that is assigned to a particular button, or you can delete the existing program assignment so that pressing the button has no effect. Removing or changing hardware button assignments can be helpful if you frequently activate hardware buttons by accident.

On-screen keyboards

Some CE devices, such as Pocket PCs, do not have a physical keyboard. Instead, you can use an *on-screen keyboard* to enter text. To activate an on-screen keyboard, tap the keyboard button in the taskbar. The currently selected on-screen keyboard pops up and partially covers any screen that is open. When you have finished entering text in a field, tap **Enter** to accept the text you have entered and move to the next field. To hide the on-screen keyboard, tap the keyboard button on the taskbar again.

An on-screen keyboard usually consists of rows of “keys”. The default keyboard shows alphabetic or alphanumeric keys, laid out like a real keyboard. As you tap each key, the corresponding character is added to the current text or numeric field in the current program.

Alternatively, an on-screen keyboard may use *character recognition*. Normally, when using a character recognition keyboard, you write with the stylus in a special field. As you draw each shape, it is translated into the corresponding character and entered into the current field. You can correct any text that is incorrectly interpreted.

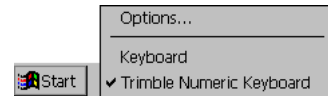
You can install different on-screen keyboards on the CE device and switch between them as required. All of these keyboards are available when you use the TerraSync software. For example, you may want to use a character recognition keyboard to quickly enter a long note, an alphabetic keyboard to enter a filename, and the **Trimble numeric keyboard** (see page 77) to enter numeric data such as the height of a feature or a distance.

If the CE device has on-screen keyboards installed, the TerraSync software automatically displays the appropriate keyboard when you select a field that accepts data entry, and hides the keyboard when you select a control that does not accept keyboard input.



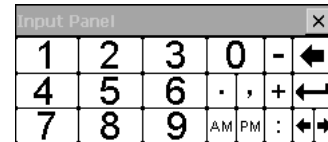
Tip – The keyboard button on the taskbar shows the icon of the currently selected on-screen keyboard.

To change the selected keyboard, tap the arrow on the right end of the on-screen keyboard button. A list of installed keyboards pops up. The currently selected keyboard is indicated by a bullet or check mark. Tap the name of the keyboard you require. The pop-up list closes automatically.



Trimble numeric keyboard

When you install the TerraSync software on a CE device that uses on-screen keyboards, the Trimble numeric keyboard is also installed. This keyboard contains numeric and symbol keys that are useful when you enter numeric data or time information.




This keyboard is available to other programs on the CE device as well as to the TerraSync software.

Note – The Trimble numeric keyboard is only available on CE devices that use on-screen keyboards, such as the Pocket PC.

Device Lock utility

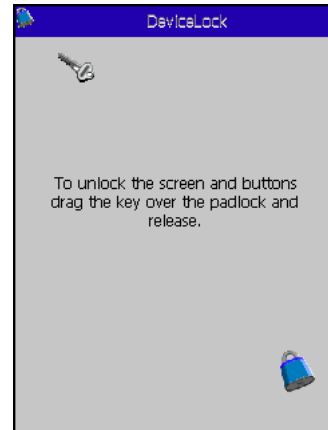
The Device Lock utility is installed with the TerraSync software on a CE device. It lets you lock the CE device so that accidentally pressing the screen, keys, or hardware buttons has no effect. Locking the CE device lets you safely clean the screen or exterior of the CE device, transport it, or carry it.

To lock the CE device, tap  / *Programs / Device Lock*. The *Device Lock* screen appears.

Once the device is locked, the screen, hardware buttons (including Record and Power buttons), and keypad (if it has one) do not respond until the device is unlocked.

Communication with external devices such as a GPS receiver, or external sensors used by the TerraSync software, is not interrupted by locking the device. This means that you can keep using the TerraSync software when the CE device is locked. For example, you may want to lock the CE device so that you can safely transport it in your pocket between features, but keep the TerraSync software connected to the GPS receiver so that you can collect a continuous block of carrier phase data.

To unlock the device, use a stylus or your finger to drag the key icon onto the padlock icon.



GeoExplorer series handheld

The handhelds in the Trimble GeoExplorer series are combined GPS receivers and CE devices.

The GeoExplorer series includes the GeoXT and GeoXM handhelds. They run either:

- the Windows Mobile 2003 software for Pocket PCs
- version 4.1 of the Windows CE operating system (Windows CE .NET)

The GeoExplorer series handheld has two types of memory, which are similar to the RAM and the hard disk in a desktop PC.

The *main memory* (RAM) is used mainly for running programs, but it also stores essential files for the operating system. The main memory is a volatile memory store, so it is cleared if the handheld loses power or is reset. However, you can back up the main memory to avoid data loss.

Note – In the TerraSync software and documentation, the term RAM is used to refer to the main memory on the GeoExplorer series handheld.

The *Disk* is like a PC's hard disk. It is used for storing programs and data. The Disk is non-volatile flash memory, so it is not affected by power losses or resetting.




Using the integrated GPS receiver

Most GPS applications, including the TerraSync software, physically connect to an external GPS receiver on a COM port. On a GeoExplorer series handheld, the GPS receiver is integrated with the CE device, so you do not have to make any physical connection. To use GPS data from the handheld's integrated GPS receiver, you connect

using a *virtual* COM port. To the GPS application, connecting to a virtual COM port is exactly the same as connecting to a physical COM port.

By default, the TerraSync software is configured to connect to the correct virtual COM port (COM3). When you run the TerraSync software for the first time on a GeoExplorer series handheld, the TerraSync software automatically activates the GPS receiver.

To connect to the GPS receiver from any other GPS application, you must select the virtual COM port that corresponds to the GPS protocol that the application uses. If the application accepts NMEA messages from the GPS receiver, connect to COM2. If the application uses TSIP messages, connect to COM3. All Trimble applications use TSIP messages to communicate with Trimble GPS receivers.

When the TerraSync software is installed on a GeoExplorer series handheld, it becomes the handheld's default GPS status application, and is associated with the F1 GPS touch button on the screen. To run the TerraSync software, you can either tap  / *Programs* / *TerraSync*, or you can tap the F1 GPS touch button. For more information on touch buttons, refer to the *GeoExplorer Series Getting Started Guide*.

TSCe field device

The Trimble GIS TSCe™ field device is a Handheld PC 2000 CE device that runs either version 3.0 of the Windows CE operating system, or version 4.1 (Windows CE .NET).
















The TSCe field device has two memory locations: RAM (the default memory location on the device) and the internal storage card (a secondary storage location). RAM is a volatile memory store that is cleared if power is lost, or a hard reset is performed on the CE device. The storage card is non-volatile memory, so these events do not affect programs and data stored on the storage card.

Note – In the TerraSync software and documentation, the term *Disk* is used to refer to the internal storage card on the TSCe field device.



Using the keyboard instead of the touch screen

To control the TSCe field device, you can use either the keyboard or the touch screen. The following table shows some common actions that you can perform with the keyboard instead of the touch screen. When more than one key is used to perform an action, you can press each key in sequence or press all keys at the same time.

Action	Keyboard shortcut
Access a drop-down menu	 and the letter key for the menu
Move between fields	
Move between buttons	 ,  ,  , or  (arrow keys)
Tap the selected button	
Select a check box	
Close a dialog or screen without saving changes	
Switch between programs	 
Open the Task Manager	 
Display the Start menu	 

Trimble Recon handheld

The Trimble Recon™ handheld is a Windows CE device that runs either:

- the Windows Mobile 2003 software for Pocket PCs
- version 4.1 of the Windows CE operating system (Windows CE .NET)















The Trimble Recon handheld has internal flash memory called Built-in Storage. It also has two CompactFlash slots, so you can use CompactFlash memory cards to expand the storage space.

Unlike most other Windows CE devices, the Trimble Recon handheld has no RAM-based file system. All files are stored either in the flash memory or on an external CompactFlash card. This means that all stored data is maintained even if power is lost.





Using the keyboard instead of the touch screen

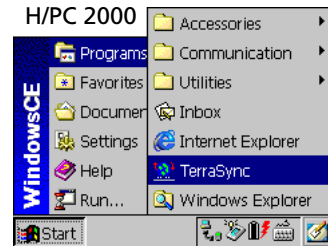
The Trimble Recon handheld has keys that you can use to perform common system functions, or that you can use instead of the touch screen. The following table shows some common actions that you can perform with the keyboard. When more than one key is used to perform an action, you can press each key in sequence or press all keys at the same time.

Action	Keyboard shortcut
Access a right-click (shortcut) menu	 and tap the appropriate item on the screen
Access a drop-down menu	 and tap the appropriate letter key on the on-screen keyboard
Close a dialog or screen without saving changes, or exit a menu without selecting a command	
Open the Task Manager	 and tap the taskbar
Tap the selected button, open the selected file, or perform the default action in a dialog or screen	 (Enter key)
Switch between programs	 
Display the Start menu	 (Windows key)
Move up, down, left, or right (for example, in a list or menu, or between buttons)	    (arrow keys on the navigation pad)
Minimize all programs and display the desktop	 (Home key)
Turn the handheld on or off	 (Power key)


Starting and Exiting the TerraSync Software

To start the TerraSync software, do one of the following:


- Tap  / *Programs/ TerraSync*.
- On a Pocket PC, tap  and then tap the TerraSync icon on the recently-used programs list.
- On an H/PC 2000 or Windows PC, double-tap the TerraSync icon on the desktop.



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

To exit the TerraSync software, tap the Close button  in the upper right corner of any of the TerraSync screens. You do not have to exit the TerraSync software before you turn off the field computer.

To switch to the TerraSync software when it is already running, do one of the following:






- Use any of the methods described above for starting the TerraSync software.
- On a Pocket PC, tap  and then tap the TerraSync icon on the recently-used programs list.
- On an H/PC 2000 or Windows PC, tap the TerraSync icon in the system tray in the taskbar.

Pocket PC



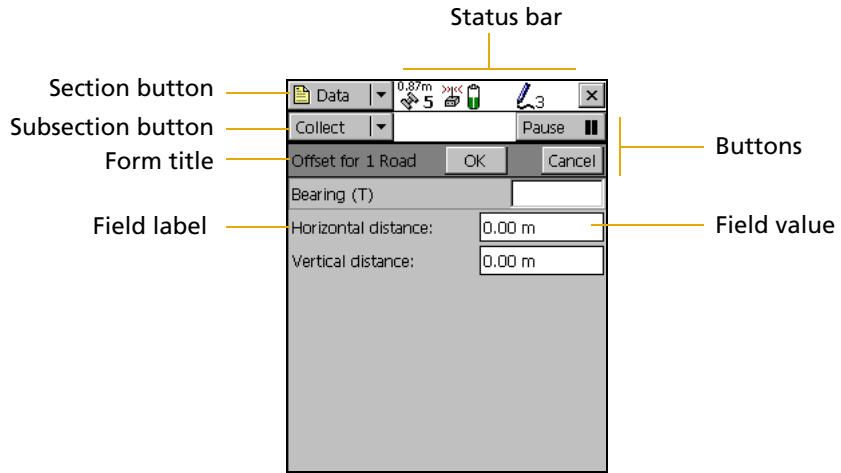
Section Structure

The TerraSync software is arranged in five *sections*:

Section	Function
 Map	View features, background files, and the GPS trail graphically.
 Data	Work with data files: <ul style="list-style-type: none"> • create a new data file or open an existing data file • collect new features or maintain existing features • move, copy, delete, or rename data and background files
 Navigation	Navigate to features using the Direction Dial and Close-up screen.
 Status	View information about: <ul style="list-style-type: none"> • the satellites the TerraSync software is tracking, their relative positions in the sky, and your current position • the GPS receiver and real-time correction source • the TerraSync software version and trademark information
 Setup	Configure the TerraSync software.

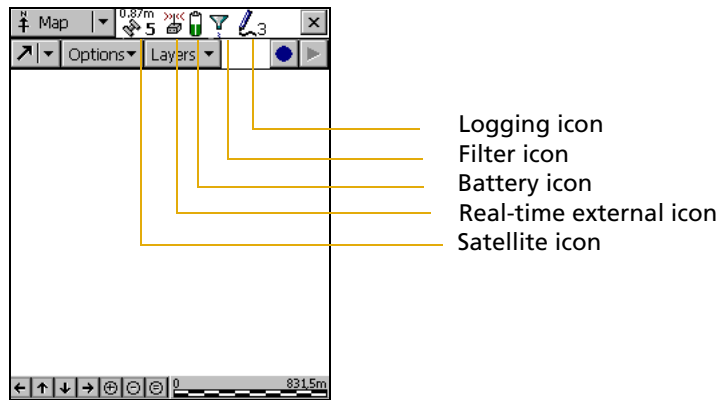
The TerraSync Software Display

The screen below shows some of the features of the TerraSync software:



Status Bar

The status bar provides basic information about the status of the TerraSync software and appears in the top row of the TerraSync software screen.



The status bar is always visible, but the icons displayed depend on the current status of the system. Table 4.1 shows the icons that can appear.

Table 4.1 Status bar: Icons





Icon	Name	Description
	Satellite icon	<p>Shows whether the geometry of the satellites is good or bad, depending on the GPS configuration settings.</p> <p>The number below the icon indicates how many satellites are being used to compute GPS positions. The satellite icon flashes when the geometry of the satellites (their PDOP or HDOP) is poor. The number flashes when not enough satellites are available. You need at least four satellites to compute GPS positions.</p> <p>The number above the satellite icon shows the current estimated accuracy (CEA) in the configured distance unit. The CEA is an indication of the horizontal accuracy of the current GPS position. It depends on several factors, including satellite geometry and the type of GPS receiver that is connected.</p> <p>Note – <i>Choosing GPS settings that emphasize productivity over precision (settings on the left side of the GPS slider) can cause the CEA to decrease rather than increase. This is because the satellite geometry has been improved by including more satellites in the calculation of the GPS position.</i></p>
	Satellite icon (RTK)	When you are logging positions using measurements from an RTK base station, the satellite icon changes to show the horizontal precision estimate for the current position. The estimate is displayed in centimeters or inches, depending on the distance units configured in the <i>Units</i> form.
	Connect icon	When the TerraSync software is trying to connect to a receiver, the connect icon appears instead of the satellite icon. If the TerraSync software cannot connect to the GPS receiver, the connect icon flashes.
	Antenna icon	<p>If the TerraSync software connects to the receiver but cannot find a GPS antenna, the antenna icon appears instead of the satellite icon. This icon flashes to warn you that there is a problem.</p> <p>If no icon appears in this position, no GPS receiver is connected.</p>

Table 4.1 Status bar: Icons (continued)










Icon	Name	Description
	Real-time external icon	Shows that the TerraSync software is receiving real-time corrections from an external source, such as a radio.
	Integrated RTK radio icon	Shows that the TerraSync software is receiving RTK corrections through the GPS receiver's integrated radio.
	External RTK icon	Shows that the TerraSync software is receiving RTK corrections through an external radio.
	Real-time VRS icon	Shows that the TerraSync software is receiving real-time DGPS corrections from a VRS server.
	RTK VRS icon	Shows that the TerraSync software is receiving RTK corrections from a VRS server.
	Real-time beacon icon	Shows that the TerraSync software is receiving real-time corrections from an external beacon receiver (for example a Beacon-on-a-Belt (BoB) receiver).
	Real-time satellite icon	Shows that the TerraSync software is receiving real-time corrections from a satellite.
	Real-time SBAS icon	Shows that the TerraSync software is receiving real-time corrections from a satellite differential service.
	Real-time SBAS icon	Shows that the TerraSync software is receiving real-time corrections from an SBAS satellite.
		If the real-time signal is lost, the current real-time icon flashes. If no icon is visible, the TerraSync software is using autonomous (uncorrected) GPS to calculate its position.

Table 4.1 Status bar: Icons (continued)






Icon	Name	Description
	Battery icon	<p>The left half of this icon indicates the charge level of the GPS receiver battery, if one is connected. The right half indicates the charge level of the field computer battery. When the battery is fully charged, the corresponding half of the battery icon appears green. The level of green is lower when the battery charge is lower. When the power level is low, the level in the icon is yellow. When the power level is critical, the level in the icon is red and the icon flashes.</p> <p>Note – A GeoExplorer series handheld (see page 79) is a combined GPS receiver and CE device, and both components use the same battery. When the TerraSync software is running on a GeoExplorer series handheld, both halves of the battery icon show the same level.</p>
	Filter icon	<p>Indicates that a filter has been applied to the open data file. When this icon is not displayed, no filter has been set up. For more information, see the <i>TerraSync Software Reference Manual</i>.</p>
	Logging icon	<p>Shows that the TerraSync software is logging a feature with code accuracy. The number at the bottom of the icon indicates the number of positions logged. The number above the icon indicates the predicted postprocessed accuracy in the configured distance unit.</p> <p>The width of the pen indicates code or carrier logging.</p>
	H-Star logging icon	<p>Shows that the TerraSync software is logging a feature with H-Star carrier accuracy. The number at the bottom of the icon indicates the number of positions logged.</p>
	Carrier logging icon	<p>Shows that the TerraSync software is logging a feature with carrier accuracy. The number at the bottom of the icon indicates the number of positions logged. The number above the icon is the carrier time (see below).</p>
02:30	Carrier time	<p>Shows that the TerraSync software is logging carrier phase measurement data. The number indicates the time, in minutes and seconds, for the current block of carrier data. If a feature is open, the carrier time is displayed above the logging icon.</p>

Table 4.1 Status bar: Icons (continued)








Icon	Name	Description
	PPA indicator	Shows the predicted postprocessed accuracy (PPA) of the current GPS position, in the configured distance unit. The PPA only appears if the connected GPS receiver is H-Star capable, and H-Star logging is set to Auto in the Logging Settings form. If a feature is open, the PPA is displayed above the logging icon.
	Logging static icon	Shows that the TerraSync software is logging a point feature or vertex in static mode, which is available only when the TerraSync software is receiving RTK corrections. In static mode, only the GPS position with the best precision estimate is logged. All other positions are discarded. The number to the right of the icon indicates whether a position has been logged. If the required precision has not been achieved, the number is 0 and no position is logged. If a position with the required precision has been logged, the number is 1. If a position with a better precision is received, it replaces the previously logged position.
	Logging vertex icon	Shows that the TerraSync software is logging GPS position information for an averaged vertex. The number to the right of the icon indicates the number of positions logged for this vertex.
	Base logging icon	Shows that the TerraSync software is logging positions to a base data file, or that is generating correction messages.
	Digitizing icon	Shows that the TerraSync software is in Digitize mode and GPS logging is paused, so tapping the map will result in a digitized position being recorded for the open feature. The number to the right of the icon indicates the number of digitized positions logged for this feature.
	Pause icon	When logging is paused, the pause icon flashes.
	Memory icon	When storage space is low, the memory icon appears. If memory gets low while you are logging positions, the memory icon flashes alternately with the logging icon. If you are not logging, the memory icon appears alone and flashes. Note – When no icon appears in this position, memory space is sufficient, and the TerraSync software is not logging position data.

Table 4.2 shows the status bar icons and the tooltips that describe them.

Table 4.2 Status bar: Tooltips











Icon	Behavior	Tooltip
0,87m	Solid	GPS is calculating positions
	Flashing	Poor satellite geometry (PDOP) or Poor satellite geometry (HDOP)
Note – The message that appears depends on whether a maximum PDOP or HDOP value is configured.		
	Flashing satellite count	Too few satellites
	Animated	Attempting to connect to GPS receiver
	Flashing	No GPS detected. Check cables and batteries.
	Flashing	Antenna is not connected to GPS receiver
	Solid	Applying real-time corrections from external source
	Flashing	Waiting for real-time corrections
	Solid	Applying real-time corrections from VRS
	Flashing	Waiting for real-time corrections
	Solid	Applying RTK corrections from an external RTK source
	Flashing	Waiting for RTK corrections
	Solid	Applying RTK corrections from a VRS
	Flashing	Waiting for RTK corrections
	Solid	Applying real-time corrections from the external beacon receiver
	Flashing	Waiting for real-time corrections
	Solid	Applying real-time corrections from the receiver's integrated beacon differential receiver
	Flashing	Waiting for real-time corrections

Table 4.2 Status bar: Tooltips (continued)















Icon	Behavior	Tooltip
	Solid	Applying real-time corrections from the receiver's integrated satellite differential receiver
	Flashing	Waiting for real-time corrections
	Solid	Applying real-time corrections from the receiver's integrated SBAS differential receiver
	Flashing	Waiting for real-time corrections
	Solid	Applying RTK corrections from the receiver's integrated RTK radio
	Flashing	Waiting for RTK corrections
	Solid	GPS receiver battery is good (75%) Field computer battery is good (75%)
	Solid	GPS receiver battery is low (25%) Field computer battery is low (25%)
	Flashing	GPS receiver battery is critical (10%) Field computer battery is critical (10%)
<i>Note – The battery icons and tooltips in this table show both batteries at the same level of charge. However, each half of the battery icon can appear in green, yellow, or red, independently of the color and level of the other half.</i>		
	Solid	Filter is applied
	Animated pen, and number increments	Positions are being logged
	Flashing pen	GPS is not available
	Animated pen and number increments	H-Star data is being logged
	Flashing pen	H-Star data is not being logged
	Animated pen and number increments	Carrier data is being logged

Table 4.2 Status bar: Tooltips (continued)

Icon	Behavior	Tooltip
	Flashing pen	Carrier data is not being logged
	Animated circle decreases in size	Vertex capture in progress
	Solid	Ready to digitize
	Flashing	Position logging is paused
	Flashing	Memory is full



Tip – A tooltip also appears when you tap a graphical element in the Skyplot screen.

Interacting with the TerraSync Software

You can interact with the TerraSync software in a variety of ways.

The following topics describe the different types of displays:

- [Screens, page 95](#)
- [Graphical screens, page 95](#)
- [Forms, page 96](#)

The TerraSync software screens also have the following features:

- [Lists, page 97](#)
- [Buttons, page 98](#)
- [Data entry fields, page 104](#)
- [Auto-incrementing Attributes, page 109](#)
- [Pop-up messages, page 110](#)
- [Sound, page 111](#)
- [Color, page 115](#)

For more ways to interact with the software if the field computer has a keyboard, see [Keyboard shortcuts, page 101](#).

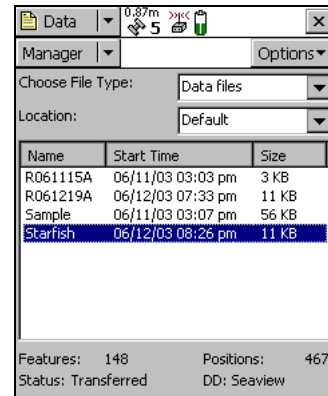
Screens

Use screens to view information in a list or table, or to make selections that provide access to other areas in the software. A screen usually displays information that you cannot edit directly.

Most screens contain buttons, lists, or labels. When a screen contains a field, a default value is supplied in the field.

Examples of screens are:

- The top level screen for each subsection in the Data section, such as the *New File* screen and the *File Manager* screen
- The main screen of the Setup section

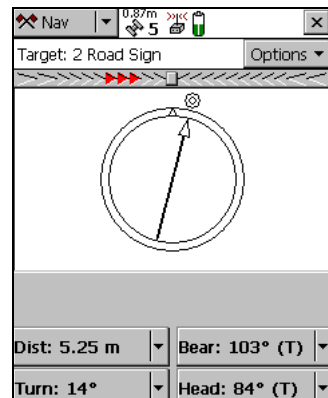


Graphical screens

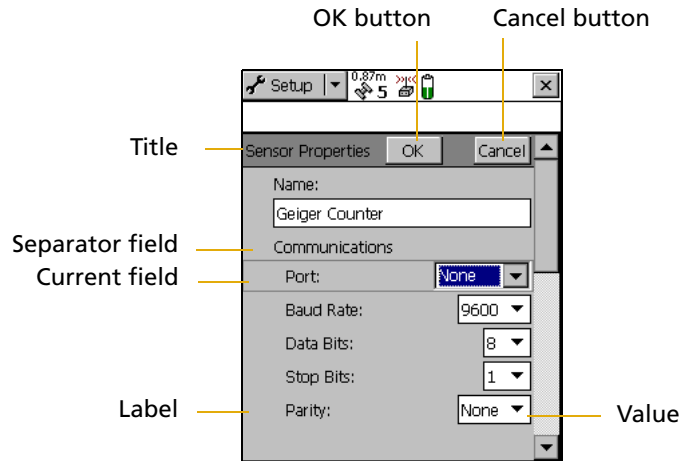
Use graphical screens to view information graphically. You cannot enter data in a graphical screen, and you cannot edit the information displayed.

Examples of graphical screens are:

- The *Skyplot* screen and *Satellite Information* screen in the Status section
- The *Direction Dial* and *Close-up* screens in the Navigation section
- The map display in the Map section



Forms



To enter data in the TerraSync software, you use a form. Like a paper form, a software form has a title and a sequence of lines or fields.

Each field on a form generally has two parts: a label (or name) and a value. A label is followed by a colon (:), which separates it from the value. Some fields are separator fields, which have no value and serve simply to divide a form into sections. If there is a dark rectangle around a field and its label, it is the current field on the form. Any editing operations apply to the current field.

To edit a field, select it. There are several ways to enter data into a form, depending on the keyboard options the field computer has, and the type of data stored in the field. See also [Data entry fields, page 104](#).

To move to the next field on a form, do one of the following:

- Tap the field you want to move to.
- Tap **Enter** on the on-screen keyboard. Tap **Enter** repeatedly to move through all fields on the form.
- Press **Tab** on the physical keyboard. Press **Tab** repeatedly to move through all fields on the form.

To move up or down the form, drag the vertical scroll bar.

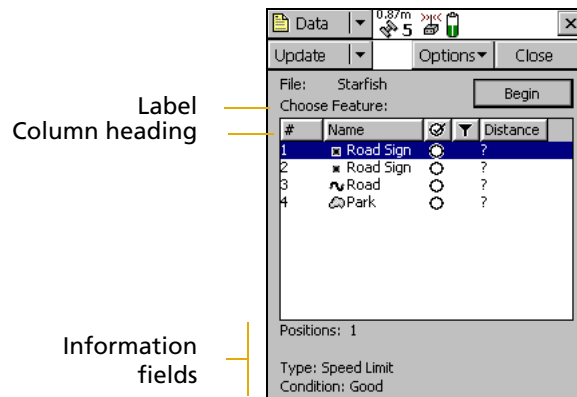
When you have finished browsing through the form, or have finished editing fields in the form, tap **OK** to accept the changes you have made and return to the previous screen.

Lists

Some forms in the TerraSync software include *lists* for you to select data files or features from. A list contains the information that is currently stored.

Each row of the list represents one file or feature. Each column shows information about that item. A list also has a label that describes its contents.

This figure shows the *Choose Feature* list, which displays all feature types in the open data file.



Often information fields are displayed at the bottom of the screen, below the list. They provide useful information about the item currently highlighted in the list.

To select an item from a list, highlight the item. If the item you want is not visible, drag the vertical scroll bar up or down until it is visible.

You can tap a column heading to sort by that column. For example, to sort the *Choose Feature* list by feature name, tap the *Name* column heading.

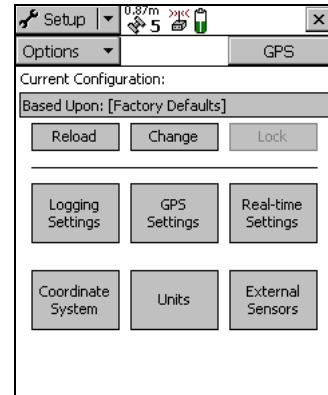


Tip – If the list is already sorted by the column you tapped, tapping the column heading reverses the sort order.

Buttons

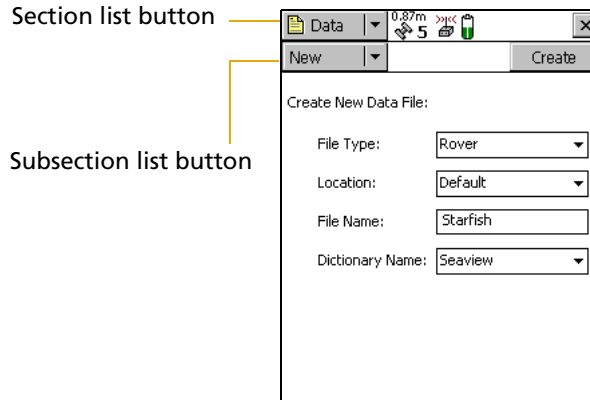
Many forms and screens in the TerraSync software contain buttons. When you tap a button, the TerraSync software carries out the appropriate command or opens a new screen. For example, if you tap **GPS Settings** in the *Setup* screen, the *GPS Settings* form appears.

List buttons and menu buttons are special buttons. They can be identified by the drop-down arrow at the right end of the button. When you tap one of these buttons, a drop-down list of commands appears. See also [List buttons, page 99](#), and [Menu buttons, page 100](#).



List buttons

List buttons are buttons that have a vertical line and a drop-down arrow at the right end of the button.



Use list buttons to move to a different section or subsection of the software, or to change the mode in the current section.

When you tap a list button, a drop-down list appears. Select an option on the list to access the command it describes. The label of the list button changes to match the option you selected.

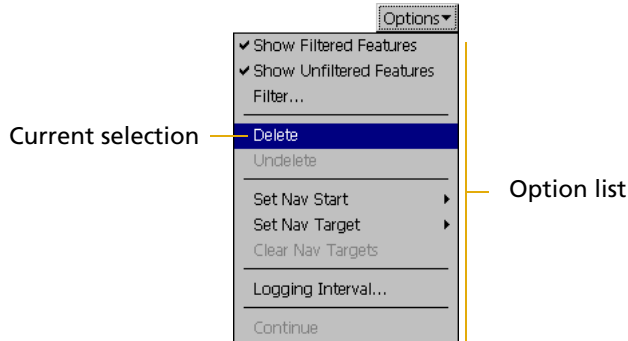
The following list buttons appear in the TerraSync software:

- Section button
- Mini Section button (appears when the software is arranged in panes. Panes are used when the TerraSync software is running on a field computer that has a screen size of 640 × 240 pixels or larger.)
- Subsection button
- Map Tools button in the Map section
- Status Mode button in the Status section

Note – List buttons differ from **menu** buttons (such as Options buttons) in their appearance, behavior, and function. See also [Menu buttons, page 100](#).

Menu buttons

Menu buttons are buttons that have a drop-down arrow at the right end of the button.



Use menu buttons to access additional functionality and commands. When you tap a menu button, a drop-down list appears. Select an option on the list to select the command it describes.

The label on a menu button does not change when you select a command from the list. (The label on a list button does.)

The following menu buttons appear in the TerraSync software:

- Any **Options** button
- The **Layers** button in the Map section
- The **Edit** button in the Data section's *Edit dictionary* form (see the *TerraSync Software Reference Manual*)

Note – Menu buttons differ from list buttons (such as the Section list button) in their appearance, behavior, and function. See also [List buttons, page 99](#).

Keyboard shortcuts

If you are using a field computer that has a keyboard, such as a notebook computer or a TSCe field device, you can use keyboard shortcuts instead of the touch screen.

To use a keyboard shortcut, hold down the **[Alt]** key on the keyboard and press the letter assigned to the shortcut. For example, the shortcut letter for switching to the Map section is M, so you can press **[Alt]+[M]** to switch to the Map section.

There are two types of shortcuts in the TerraSync software: global and local shortcuts.

Global shortcuts apply wherever you are in the software. They let you perform important actions such as switching quickly between the sections of the software. If you use the shortcut for the current section or subsection, the corresponding list drops down. For example, if you press **[Alt]+[M]** when the Map section is already open, the Section list drops down.

You can also use global shortcuts to close the current file, exit the software, or control data logging from any section or screen of the software

Note – *Global shortcuts do not apply when the Data Dictionary Editor is open.*

Local shortcuts apply only within the current form or screen. They open lists such as the Options list or subsection list, or run commands on the open list.

The same local shortcut letter may be used in different screens to perform different tasks. For example, if you press **[D]** when the Setup section's Option list is open, the TerraSync software disconnects from the GPS receiver. However, if you press **[D]** in the File Manager subsection's Option list, the TerraSync software deletes the selected file.

If the field computer's screen size is 640 × 240 pixels or larger, the screen is arranged in panes. Local shortcuts work only for the primary pane (the pane in the top left of the screen).

This table lists the *global* shortcuts in the TerraSync software:

Action	Keyboard shortcut
Open Map section	Alt+M
Open Data section	Alt+D
Open Navigation section	Alt+N
Open Status section	Alt+S
Open Setup section	Alt+E
Open Skyplot screen	Alt+K
Open New File subsection	Alt+T
Open Collect Features subsection	Alt+T
Open Update Features subsection	Alt+U
Start, pause, or resume logging GPS	Alt+L
Close current data file	Alt+C
Exit the TerraSync software	Alt+Q

This table lists the *local* shortcuts in the TerraSync software:

Action	Section	Keyboard shortcut
Select a command on an open list	All sections	Underlined letter
Open the Options list for the current screen	All sections	Alt+O
Open the Layers list	Map	Alt+A
Zoom in	Map	Alt+Z
Zoom out	Map	Alt+Y
Zoom extents	Map	Alt+X
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Data entry fields

The method you use to enter data in a field on a form depends on the type of field you are entering data into, and on the availability of keyboards.

The following types of field can appear:

- [Text fields, page 105](#)
- [Numeric fields, page 105](#)
- [Menu fields, page 105](#)
- [Time fields, page 106](#)
- [Date fields, page 107](#)
- [Filename fields, page 107](#)

If the field computer has a physical keyboard, you can use it to enter text or numbers, just as you would in any Windows program. If you do not have a keyboard, you can use on-screen keyboards for data entry. An on-screen keyboard is a small dialog that pops up from the taskbar when you select a field that allows data entry. You can also manually activate an on-screen keyboard at any time.

Use the on-screen keyboard to specify the text or number you want to enter. As you enter characters, they appear in the selected field. An on-screen keyboard may provide “keys” for you to tap, or may accept handwriting which it interprets as text.

If you use an on-screen keyboard to enter values, the TerraSync software automatically moves the focus to the next field on the form. To move through the fields on a form, repeatedly tap **Enter** on the on-screen keyboard. If the field computer has a physical keyboard, press the **Tab** key to move through the fields. When you reach the end of the form, the focus moves to the first field on the form. See also [On-screen keyboards, page 76](#).

Text fields

To enter a value in a text field, use an on-screen keyboard or the physical keyboard. If you are using a field computer with on-screen keyboards, a keyboard pops up automatically when you select a text field. The keyboard that pops up is the one that was selected when you started the TerraSync software. See also [On-screen keyboards, page 76](#).

Numeric fields

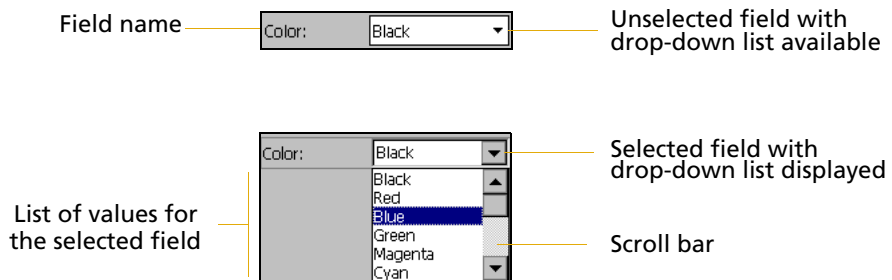
To enter a value in a numeric field, use an on-screen or physical keyboard. If the field computer uses on-screen keyboards, the [Trimble numeric keyboard \(see page 77\)](#) pops up when you select a numeric field.



Tip – Any text or numeric field can be defined as an auto-incrementing attribute. See also [Auto-incrementing Attributes, page 109](#).

Menu fields

A menu field has a predefined list of values associated with it. To change the selected value, tap the drop-down arrow at the right of the field and select an option from the list.



The current value in a drop-down list is highlighted. To choose a different value, select the value from the list. If a drop-down list has more options than fit on one screen, a scroll bar appears on the right. Drag the scroll bar or tap the arrow buttons to scroll up and down the list.

Some menu fields can store either a value you enter or a value you select from a list. For example, in the *Data* form in the Setup section, the *Interval* field can accept either an integer between 1 and 999, or Off. The field lets you enter a value manually using an on-screen or physical keyboard, but also includes a drop-down list of values.

Time fields

You can enter time values manually using an on-screen or physical keyboard, or you can select the current time from a drop-down list. If the field computer uses on-screen keyboards, the Trimble numeric keyboard pops up when you select a time field.

To enter the current time, tap the arrow at the right of the field and select Now from the drop-down list.

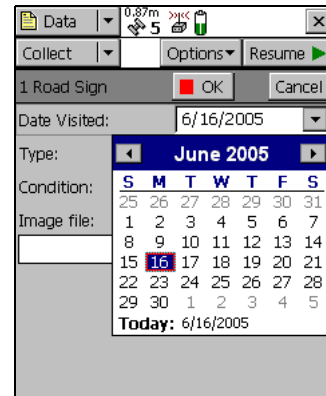
In the data dictionary, you can specify that a time attribute is automatically set to the current time when the feature is created, when the feature is updated, or both.

Date fields

You can enter a date value manually using the physical keyboard, or by selecting it from the drop-down calendar.

To enter a date manually, type it in from the keyboard. To select it from the calendar, tap the drop-down arrow at the right of the date field and select the date you require from the calendar.

In the data dictionary, you can specify that a date attribute is automatically set to the current date when the feature is created, when the feature is updated, or both.




Filename fields

A filename field lets you attach an existing file to a feature.


The TerraSync software does not record attached files. Use other software or hardware, such as a digital camera or sound recorder, to create and save files before you attach them to features.

You can enter a filename manually using the physical keyboard, or you can select the filename from the drop-down list for the filename field.

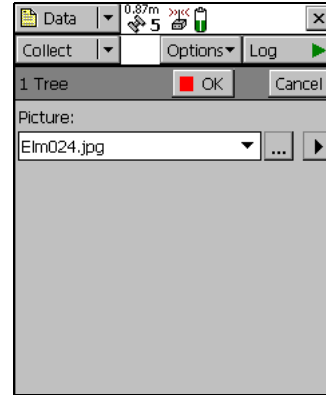
The drop-down list shows files in the current working folder. To change the working folder, tap the Browse button  to the right of the filename field. In the pop-up window that appears, navigate to the folder you need.



Tip – If you set the working folder to the folder where the files to be attached are stored, you can simply select the appropriate file for each feature from the drop-down list, without having to check or change the working folder each time.

To view the currently selected file, tap the Preview button  beside the attribute field. The file is opened in the default program associated with its file type.

Once you attach a file to a filename attribute in a feature and save the feature, the selected file is moved to the TerraSync software data folder and assigned a unique name. If you open the feature for review later, the actual filename is not displayed, because the file has been renamed. Instead, a message based on the file type appears. For example, if you attached the file Elm024.jpg to a feature, the text “Attached JPG File” appears in the attribute field.



When you transfer the data file to the office computer using the Trimble Data Transfer utility, any attached files are transferred with the data file, and are stored with the transferred data file. This link is also maintained when you export the data file to a GIS. For more information, refer to the *Data Transfer Utility Help*.



Tip – Sometimes, to save space or to create better quality files, recording software on a CE device (such as sound recording software that creates .wav files) uses a default file format that is unreadable on a desktop computer. Before going out into the field, test that you can transfer and read files created by the software that you want to use. If necessary, change the recording software’s settings to use a format that is compatible with the desktop computer.

Auto-incrementing Attributes

Any numeric or text attribute can be defined as an auto-incrementing attribute. When you create a new feature, the TerraSync software automatically fills in each auto-incrementing attribute with a default value. This value is the next value in the auto-incrementing sequence, is based on the step value you specified in the data dictionary and the last value entered in the field. The sequence can increase or decrease, and may advance in any increment (step) value, provided this value is within the acceptable range for the attribute.

Although you can define a text attribute as an auto-incrementing attribute, only numeric values within the text are incremented or decremented. For example, if the last value you entered was 47A, and the step value is 1, the next value generated by the TerraSync software is 48A. However, if the last value was AAA, the next is still AAA, as there is no numeric component to increment.

When the text consists of more than one number interspersed with alphabetic characters, only the last number is incremented. For example, if the step value is 1, and the last value was A100-K9, the next value is A100-K10.

The auto-incremented value is only a default value, so you can edit it if you want. If you do, the next value in the sequence is calculated using the new value you entered, not the original value generated by the TerraSync software.

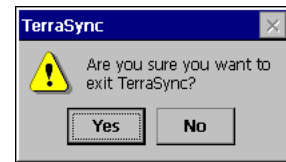
If the TerraSync software cannot generate the next value in the sequence, it creates the attribute without a value. This occurs if:

- the feature is the first of its type to be created in this file and no default value is specified
- the last value for the attribute was blank
- the last value was the maximum value in the range and the sequence is incrementing
- the last value was the minimum value in the range and the sequence is decrementing

To make an attribute auto-incrementing, you must set an increment value in the data dictionary. You can do this in the Data Dictionary Editor utility in the GPS Pathfinder Office software, or in the Data section's dat dictionary editor. For more information on making an attribute auto-incrementing, refer to the *Data Dictionary Editor Help*.

Pop-up messages

When the TerraSync software asks a question, it displays a pop-up message. You must answer the question before you can continue working with the TerraSync software. To answer the question, tap one of the buttons on the message box. The pop-up message disappears.

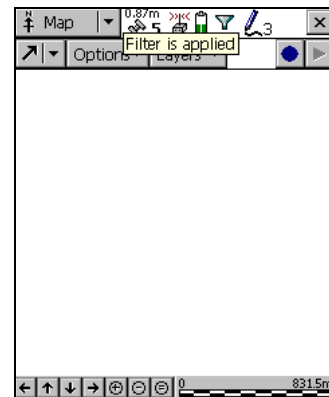


Error messages are examples of pop-up messages. Warning and Error messages should be noted, because they contain important information about the task you are trying to perform.

Tooltips

A tooltip is a yellow message box that contains information about an item on the screen, or about the current system status. Tooltips appear:

- when you tap on an icon in the status bar
- as transient messages in the status bar
- when you tap on an item on the map
- when you measure distances and areas on the map



To close a tooltip, tap it, or tap anywhere else on the screen.

If you tap any icon in the **Status Bar** (see page 86), a tooltip appears over it. The tooltip contains information about the current state of the system function the icon represents. For example, if you tap the **Filter icon** (see page 89) when a filter is in use, a tooltip appears, showing the message **Filter** is applied.

A transient message shows information that is only important for a few seconds, such as notification that you have successfully recorded an offset with a laser rangefinder, or that the feature has been stored. A tooltip that contains a transient message appears over the status bar for three seconds, or until you tap the tooltip. Other functions in the software are not affected by transient messages.

In the Map section, you can tap on any item to display its Position information in a tooltip. When you use the Measure tool in the map, Measurement information appears in a tooltip in the top left corner of the map display (see the *TerraSync Software Reference Manual*).

Sound

The TerraSync software uses sound to indicate special conditions or events. Often these conditions are accompanied by a change in a status icon. For example, when the battery on the GPS receiver gets low, the battery icon in the **Status Bar** (see page 86) flashes, and the **Low GPS battery** (see page 112) sound is played.

The events and conditions that can occur fall into three categories:

Category	Description
Success	An operation has been successfully completed, or a warning condition has been resolved. By default, a success event uses a sound with rising tones.
System	A message box, containing a question or information about an error that has occurred, has appeared. You must tap the button in the message box to acknowledge the message before you can continue working with the TerraSync software.
Warning	A condition exists that could cause loss of data, or could prevent you from collecting data successfully. By default, a warning is indicated by a sound with falling tones.

The following table lists events and conditions in the TerraSync software, and the sounds that are used for them:


Event	Sound category	Description
Feature stored	Success	The feature has been successfully stored.
GPS connected	Success	The TerraSync software has successfully connected to the GPS receiver and is receiving position information.
GPS OK	Success	The GPS quality has increased to the levels you have specified, and the TerraSync software is logging positions again.
Minimum positions stored	Success	The TerraSync software has logged the minimum number of positions for the current feature. You can now safely close this feature and begin logging another feature.
Navigation proximity alarm	Success	The navigation target is within the close-up range you have specified, and the Direction Dial screen changes to the Close-up screen.
Position logged	Success	The TerraSync software has successfully logged a GPS position.
Real time OK	Success	The connection to the specified source of real-time differential correction has been regained.
General error	System	An error has occurred. An error is indicated by the sound the field computer uses for the Critical Stop event.
Question	System	The TerraSync software requires some information or a decision from you. The question appears in a message box and is indicated by the sound the field computer uses for the Question event.
Dead GPS battery	Warning	The battery in use by the GPS receiver is dead. The TerraSync software continues to operate but no position information is received until the battery is replaced.
Low GPS battery	Warning	This sound plays repeatedly and the battery icon in the status bar flashes when the battery in use by the GPS receiver is running low and needs to be replaced.

Event	Sound category	Description
Poor geometry	Warning	GPS position quality has dropped below the level you have specified because the visible satellites are too close together in the sky. The TerraSync software has paused logging until geometry improves.
Real time lost	Warning	The connection to the specified source of real-time differential correction has been lost.
Too few satellites	Warning	GPS position quality has dropped below the level you have specified because there are not enough visible satellites. The TerraSync software has paused logging until more satellites become visible.
Carrier lock lost	Warning	Carrier lock has been lost. The TerraSync software has stopped logging carrier or H-Star data.

Customizing sounds

The TerraSync software is supplied with default sounds for all warning and success events. However, you can customize these sounds or disable any or all of the sounds played by the software.

To enable or disable all sounds as a group:

1. Tap .
2. Do one of the following:
 - On a Pocket PC, select *Settings / Volume and Sounds*.
 - On an H/PC 2000, select *Settings / Control Panel / Volume and Sounds*.
3. In the *Enable sounds for* group, select or clear the *Applications* check box to enable or disable warning and success sounds.
4. Select or clear the *Events* check box to enable or disable sounds for questions and error messages in the TerraSync software.



Tip – All the sounds used in the TerraSync software are wave (.wav) files. A default .wav file is supplied for each warning or success event that occurs in the software. You can change any of the sounds used by simply replacing the appropriate .wav file in the Windows folder on the field computer. To disable a sound, delete or rename its .wav file.

The events and their corresponding sound (.wav) files are as follows:

Event	Sound file
Feature stored	FeatureStored.wav
Dead GPS battery	GPSPatteryIsDead.wav
Low GPS battery	GPSPatteryIsLow.wav
GPS connected	GPSIsConnected.wav
GPS OK	GPSIsOK.wav
Poor geometry	PoorGeometry.wav
Position logged	PositionLogged.wav
Real time lost	RealTimeIsLost.wav
Real time OK	RealTimeIsOK.wav
Carrier lock lost	LockLost.wav
Minimum positions stored	MinimumPositionsStored.wav
Navigation proximity alarm	CloseUpChange.wav
Too Few Satellites	TooFewSatellites.wav
Question	The file that the field computer uses for the Question event. By default, this is Question.wav. Use the Volume and Sounds system setting to replace the sound for this event.
General error	The file that the field computer uses for the Critical Stop event. By default, this is Critical.wav. Use the Volume and Sounds system setting to replace the sound for this event.

Color

The TerraSync software uses color to make it easier for you to distinguish important information, and to distinguish between similar items. Color is always used in conjunction with at least one other feature such as a sound, icon, or bold text.

The following features of the TerraSync software use color to provide extra information or to clarify the display:

- Battery icon, see [page 92](#)
- Map layer colors

Map layer colors

The information displayed in the Map section is arranged in five layers. To make the map display clearer, you can select a different color for each of these Map layers. If a layer contains features, you can either use the feature colors assigned in the data dictionary, or set a single color for all features in the layer.

To select layer colors, tap **Layers** in the Map graphical screen and select *Layer Formatting*. The *Layer Formatting* form appears. You can set each layer to display in a different color. You can also set two or more layers to the same color.

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