GETTING STARTED GUIDE

TerraSync™ software

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Version 3.00
Revision A
Part Number 43164-27
March 2007

Trimble®

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This product is covered by the following patent: 6,377,891.

Release Notice

This is the March 2007 release (Revision A) of the *TerraSync Software Getting Started Guide*, part number 43164-27. It applies to version 3.00 of the TerraSync software.

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4.2 The ECW JPEG 2000 Runtime component(s) of this Software allowing decompression of ECW JPEG 2000 images is provided under license from Earth Resource Mapping Limited, 2 Abbotsford Rd., West Leederville, Western Australia 6007. Any redistribution of such Runtime component(s) by you is prohibited.

Contents

CHAPTER

1

Introduction

In this chapter:

Welcome to the *TerraSync Software Getting Started Guide*. This guide provides:

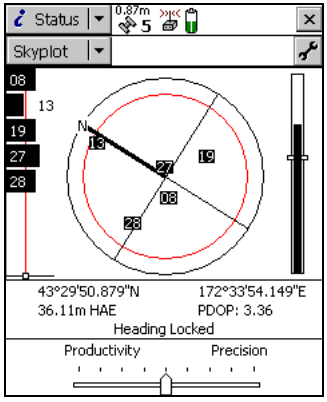
- an overview of the Trimble® TerraSync™ software
- a tutorial on using the TerraSync software
- a guide to the user interface and general operation of the TerraSync software

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

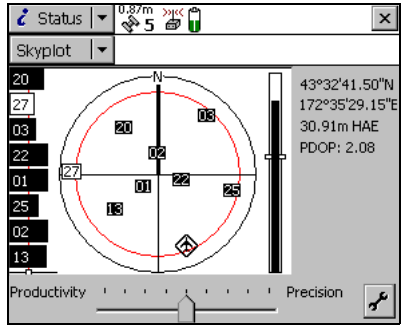
This publication assumes that you know how to use the Microsoft® Windows® operating system that you are using.

Documentation conventions

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



Portrait orientation (240 x 320)



Landscape orientation (320 x 240)

About 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 a handheld device (for example a Windows Mobile-based device) or a PC (for example a Tablet PC) running the TerraSync software.

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 new 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 Compatible GPS receivers, page 49) 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 differential correction sources, including an integrated beacon receiver, integrated satellite receiver, integrated SBAS (Satellite Based Augmentation System) receiver, external radio, Virtual Reference Station (VRS™) or external beacon receiver (for example a GeoBeacon™ receiver).

The TerraSync software provides mission planning in the field and data dictionary editing tools. Trimble postprocessing software (the GPS Pathfinder® Office software and the Trimble GPS Analyst™ extension for ESRI ArcGIS software) works with the TerraSync software. Use the postprocessing software to create data dictionaries, transfer data, import and export files, and postprocess collected GPS data.

TerraSync Professional edition software

The TerraSync software is available in two editions: Standard and Professional. The TerraSync Professional edition software offers several additional useful features. With the Professional edition you can:

- update imported data files, including:
  - 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.
- display background images or data files in the Map section.
- use an external sensor (including laser rangefinders) when collecting data.
- use a survey receiver to collect RTK data.

If you have purchased the TerraSync Standard edition software and would like to use these additional functions, you can upgrade your software to the TerraSync Professional edition software. For upgrade pricing details, contact your local Trimble reseller.

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.

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 Help*
- *TerraSync Software Release Notes*

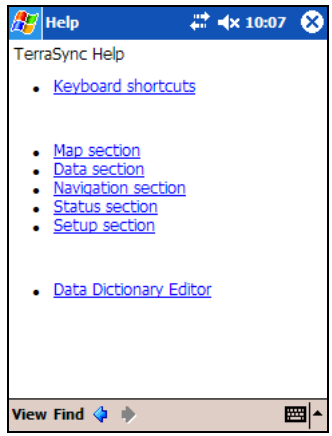
TerraSync Software Reference Manual

The *TerraSync Software Reference Manual* provides:

- reference information about every screen and control in the software
- information about advanced functions, such as high-accuracy data collection, and using a Virtual Reference Station (VRS™)
- introductory information about coordinate systems
- troubleshooting information
- a glossary of terms used in the TerraSync software and documentation.

The *TerraSync Software Reference Manual* is provided as a PDF file on the *TerraSync Software CD*.

TerraSync Software Help



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

The 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 the TerraSync software context-sensitive help from:

- a Windows Mobile-based device, tap and then select *Help*.

  If you tap and then select *Help* on the device when the TerraSync software is ***not*** running, the main Help Contents topic appears. Select *TerraSync* to open the Contents topic of the TerraSync Help.

- a PC, press F1. Alternatively, hold down the Alt key on the keyboard and then press H.

Release Notes

The *TerraSync Software Release Notes* describe new features in this version of the software and any changes to the documentation, and provide any information not included in the product documentation. The release notes are provided in the box with the software. They are also provided as a PDF file on the *TerraSync Software CD* and are installed in the program directory (typically C:\Program Files\Trimble\TerraSync) when you install the software.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, ***contact your Trimble reseller***.

Technical support

Go to the TerraSync software technical support page (www.trimble.com/terrasync_ts.asp) on the Trimble website for the latest support information about the software, including:

- FAQs
- support notes detailing the latest support issues
- documentation
- the latest files available for download

Windows error reporting

If for any reason a Microsoft Windows Error Reporting dialog appears, indicating that the TerraSync software has encountered a problem and needs to close, you are asked whether you wish to send an error report to Microsoft.

Trimble recommends that you click **Send** and then click any subsequent links that are used to obtain additional information.

Trimble can access the report that is sent to Microsoft and use it to improve the TerraSync software.

Your comments

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

CHAPTER

2

Software Installation

In this chapter:

This chapter describes how to install version 3.00 of the TerraSync software onto a Windows Mobile-based device or a Windows PC for the first time.

To install the TerraSync software, you must:

1. Make sure your field or office computer meets the minimum platform requirements for successful operation of the TerraSync software.
2. Register your copy of the TerraSync software and obtain an installation code.
3. Install the software using the *TerraSync Software CD* and the installation code you obtained when you registered your copy of the software.

System requirements

Field computer specifications

Version 3.00 of the TerraSync software runs on handheld devices running any of the following Microsoft operating systems:

- Windows Mobile® version 5.0 software
- Windows Mobile 2003 software
- Windows CE version 5.0
- Windows CE .NET (version 4.2 or later)

Version 3.00 of the TerraSync software runs on computers running any of the following Microsoft operating systems, including 64-bit variants:

- Windows Vista™ (Ultimate Edition, Enterprise Edition, Business Edition, or Home Edition)
- Windows XP (Professional Edition, Home Edition, or Tablet PC Edition)
- Windows 2000 Professional (SP 3)

For detailed specifications, go to the Trimble website at www.trimble.com/terrasync_specs.shtml.

Required software

To install the TerraSync software onto a Windows Mobile-based device and to transfer files between a desktop computer and a Windows Mobile-based device, you must have the appropriate Microsoft software installed on your PC or Tablet PC. The software you use to manage the connection between the device and the computer depends on the operating system the office computer is running. If the computer is running:

- Windows Vista, make sure you have downloaded and installed the Windows Mobile Device Center.

- Windows XP or 2000, make sure you have installed the appropriate version of Microsoft ActiveSync® technology.

For more information, see Step 1: Install Microsoft connection management software onto the computer, page 29.

To transfer files between a desktop computer and a field computer running the TerraSync software, you must also 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.shtml
- version 4.00 or later of the Trimble GPS Pathfinder Office software

Registering the TerraSync software

Before you can install the TerraSync software, you must register your copy of the software to obtain an installation code that you enter during the installation process.

You can only register your copy of the TerraSync software once. For information about obtaining your installation code when the software has already been registered, see Obtaining your installation code after registration, page 24.

Trimble recommends that you register ***before*** beginning installation.

To register, you need:

- the Proof-of-Purchase Number (POPN) from the TerraSync software packaging

  The Proof-of-Purchase Number (POPN) is labelled “POPN” and is located on the product label inside the software folder, below the software CD.

- Internet access (including a valid e-mail address)

Note – *If you do not have Internet access, contact your local Trimble reseller for assistance.*

To register your copy of the TerraSync software:

1. Go to the My Trimble account login page.

   To do this, open your Web browser and go to www.trimble.com/register.

   Alternatively:

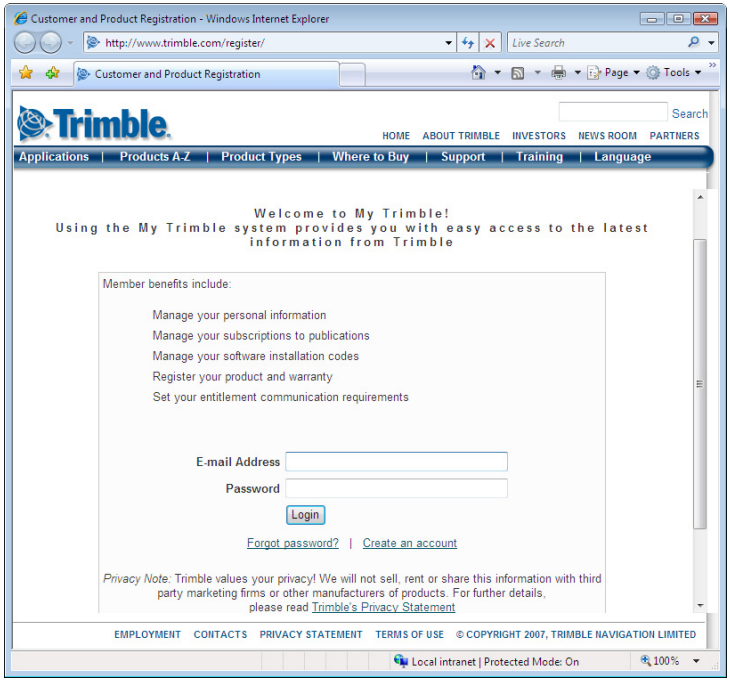
   a. Insert the *TerraSync Software CD* in the CD drive of the office computer.

      The Setup screen appears:

Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

b. Click *Register*.

Your default Web browser opens and displays the My Trimble account login page:

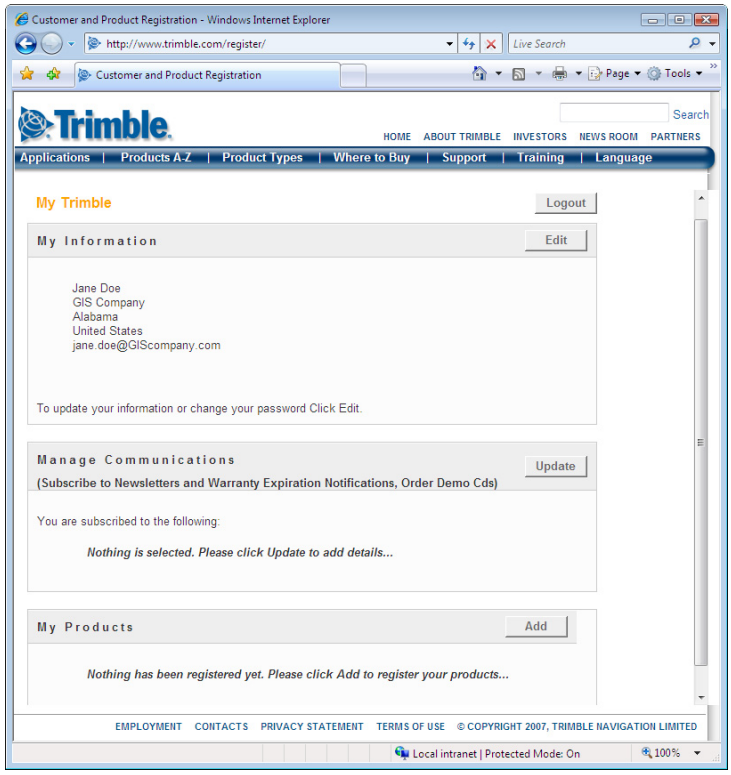


2. If you already have an account, skip this step and go to step 4 to log in.

   To create your My Trimble account, click *Create an account*. Enter your contact details and then click **Save**. Your account is created and you are returned to the My Trimble account login page.

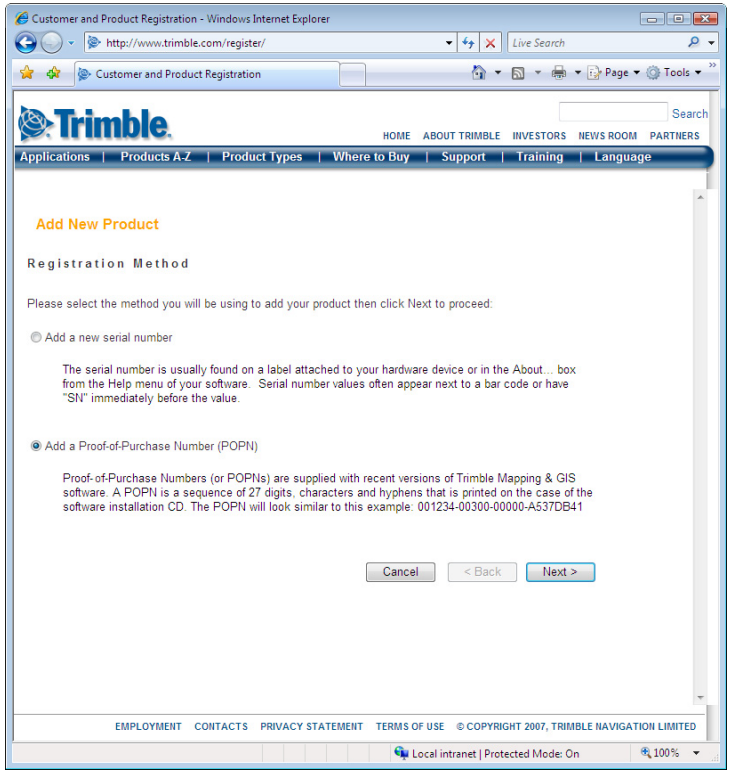
3. Enter your e-mail address and password, and then click **Login**.

The *My Trimble* page for your account appears. It will look similar to the one shown below:



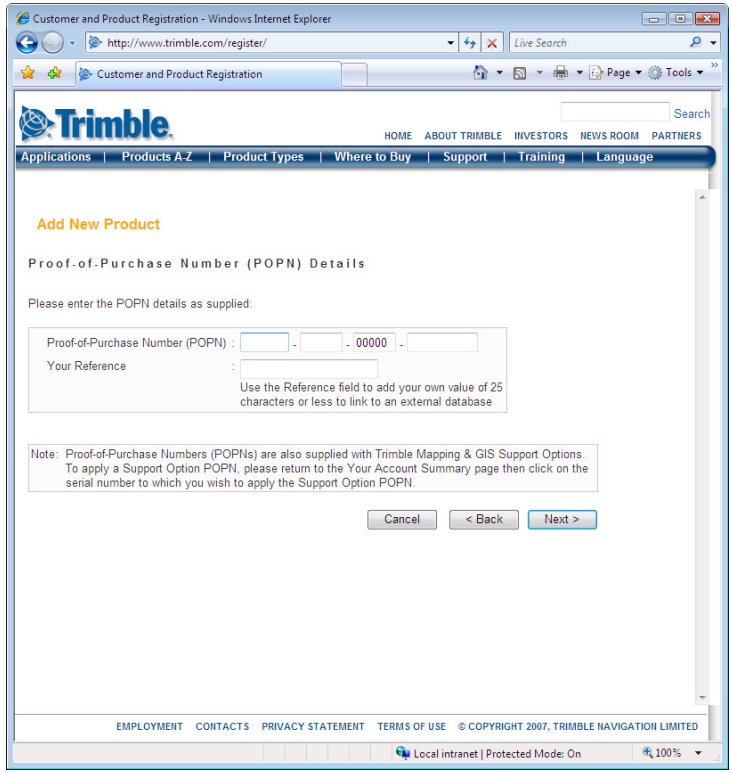
4. To register the TerraSync software, scroll to the *My Products* section and then click **Add**.

The *Registration Method* page appears:



5. Select the *Add a Proof-of-Purchase Number (POPN)* option and then click **Next**.

The *Proof-of-Purchase Number (POPN) Details* page appears:

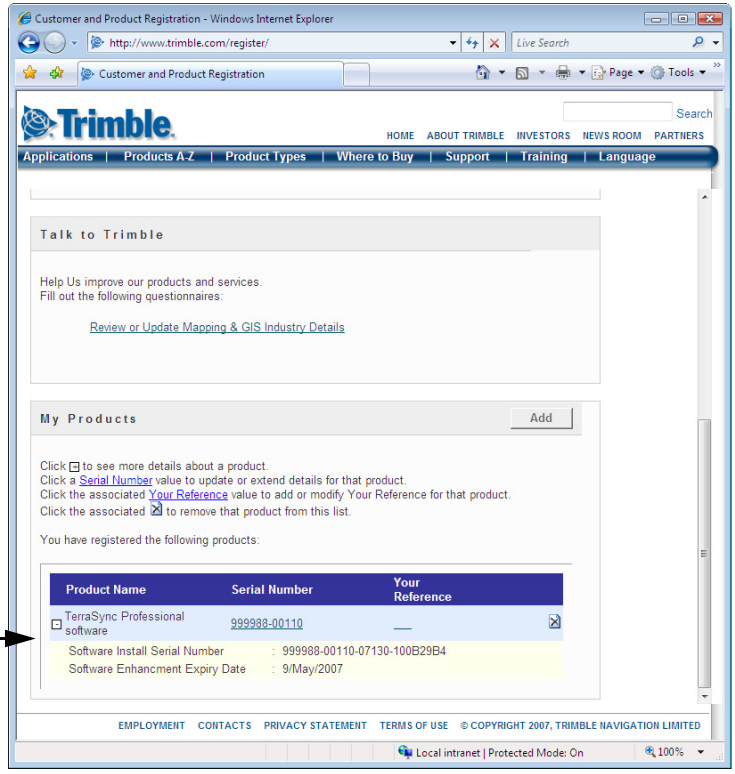


6. Enter the Proof-of-Purchase Number (POPN) provided on the TerraSync software packaging. The POPN is located on the product label inside the software folder, below the software CD.
7. If you want to enter your own reference code, for example a sales order number or an asset/inventory number, enter it in the *Your Reference* field.
8. Click **Next**.

Note – *If a message warns that the POPN you entered has already been registered, click* ***Cancel*** *to cancel the registration process. Then obtain the installation code for your copy of the software and install the software. For more information, see* *Obtaining your installation code after registration, page 24**.*

9. If this is the first time that you have registered a Trimble Mapping and GIS product, the *Mapping & GIS Industry Details* page appears. From the drop-down lists, select your organization type and most common market segment and then click **Save**.

10. You are returned to your My Trimble page, where the software you have just registered now appears in the My Products section:



Installation code

11. If the two lines below the TerraSync software do not appear, click the + beside the copy of the TerraSync software that you have just registered.

    The *Installation Code* field shows the installation code for your copy of the TerraSync software. Make a note of this code. You will need to enter this code when you install or reinstall the software.

Note – *If you are entitled to an upgrade from a previous version of the TerraSync software, you can install TerraSync version 3.00 using the installation code that you obtained when you first registered the product. If you are* ***not*** *entitled to an upgrade, the installation program will not accept your installation code. Contact your local Trimble reseller to purchase a software maintenance option.*

Obtaining your installation code after registration

To reinstall the TerraSync software, for example if you have uninstalled it from one computer and wish to reinstall it to another, you must use the same installation code that you received when you registered the software before installing it for the first time.

If you do not know the installation code, do one of the following:

- If someone else at your company registered the software ask them for the installation code.

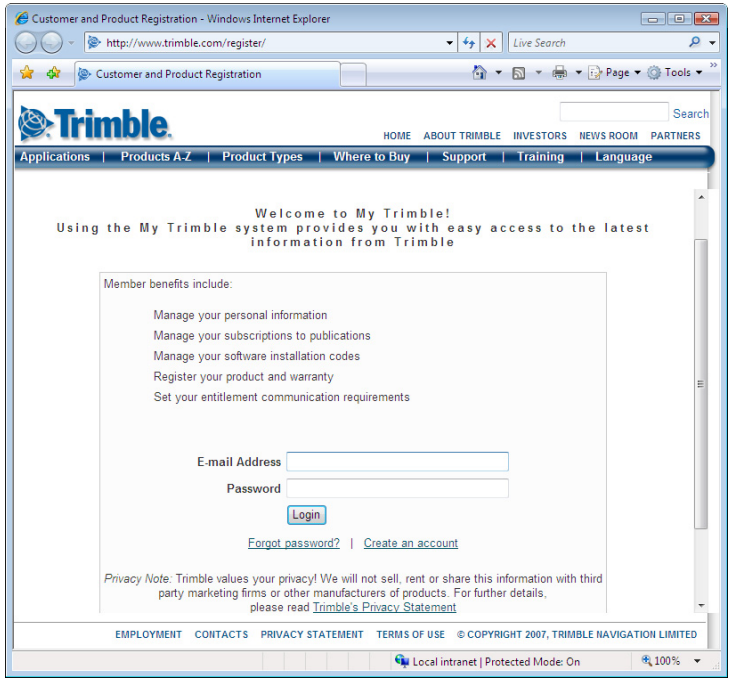
  If you cannot find out who registered the software, send an e-mail containing the Proof-of-Purchase Number (POPN) for your copy of the software to Trimble_support@trimble.com.

- If you registered your copy of the software yourself, you can check your installation code from the My Trimble page of the Trimble website.

To do this:

a. Open your Web browser and go to www.trimble.com/register.

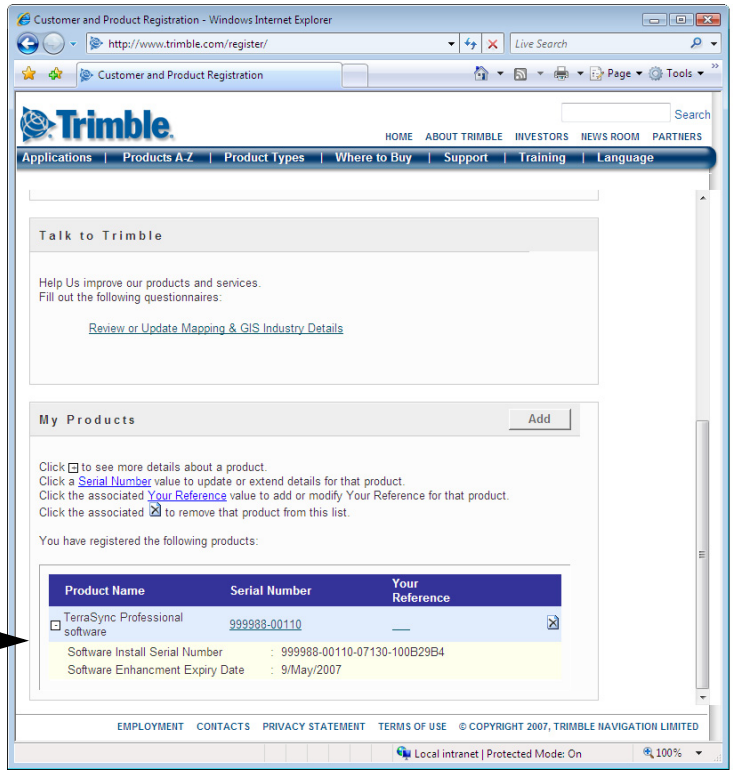
Your default Web browser opens and displays the My Trimble account login page:



Enter your e-mail address and password, and then click **Login**.

The *My Trimble* page for your account appears.

b. Scroll to the My Products section, where any software that you have already registered appears:



Installation code

c. If the two lines below the TerraSync software do not appear, click the + beside the copy of the TerraSync software that you have just registered.

The *Installation Code* field shows the installation code for your copy of the TerraSync software. Make a note of this code. You need to enter this code when you install or reinstall the software.

Installing the TerraSync software

This section describes how to install the TerraSync software. It provides information about the following options:

- Installing a translation of the TerraSync software (see below)
- Installing the TerraSync software on a Windows Mobile-based device, page 28
- Installing the TerraSync software on a Windows PC, page 43

Installing a translation of the TerraSync software

Trimble recommends that you install a translation of the TerraSync software only on a field computer that has the corresponding language version of the operating system installed. For example, install the Japanese TerraSync software on a field computer that has a Japanese Windows operating system installed.

Note – *The Regional Options applet in the Control Panel only changes the display of date, time, units, and currency information. It does not change the language of the operating system running on the device or field computer.*

System commands (such as the **OK** and **Cancel** buttons) are generated by the operating system, so they appear in the language of the operating system on the field computer. If you use the TerraSync software on a field computer that does not have the corresponding translation of the operating system installed, system commands are not translated. Also, some characters may not be interpreted or displayed correctly.

For best results, make sure that the languages used by the TerraSync software and the operating system match. If they do not, install any font that is supplied with the TerraSync software for that language. For more information, see Step 7: Install fonts on the Windows Mobile-based device, page 41.

Note – *The fonts that the TerraSync software uses are included with translated Windows desktop operating systems, so you do not need to install them to use the TerraSync software on a PC.*

The TerraSync software is available in several languages. To install a translation of the TerraSync software, use the TerraSync Updater utility to automatically download language files for translated installations of the TerraSync software.

The TerraSync Updater utility is available:

- As part of the English TerraSync software installation. When the InstallShield Wizard Complete step appears towards the end of the installation, select the *Yes, check for program update*s option.

  For more information, see:

  – Installing the TerraSync software on a Windows Mobile-based device, page 28

  – Installing the TerraSync software on a Windows PC, page 43

- On the version 3.00 *TerraSync Software CD*.

Installing the TerraSync software on a Windows Mobile-based device

This section describes how to install the TerraSync software on a supported Windows Mobile-based device.

The installation procedure comprises the following steps:

1. Install Microsoft connection management software onto the office computer.
2. Connect the Windows Mobile-based device and the computer.
3. Back up any TerraSync software data files.
4. Uninstall any previously installed versions of the TerraSync software.
5. Check that you have enough space on the device to install version 3.00 of the TerraSync software.
6. Install version 3.00 of the TerraSync software..

7. If necessary, install the appropriate font (if you have installed a translated version of the TerraSync software).

More information about each step is provided below.

Step 1: Install Microsoft connection management software onto the computer

To install software onto a Windows Mobile-based device, you must connect the device to the office computer. If the computer is running:

- Windows Vista, use the Windows Mobile Device Center to manage the connection.
- Windows XP or 2000, use Microsoft ActiveSync technology to manage the connection.

Note – *You must install the Windows Mobile Device Center or ActiveSync technology onto the computer* ***before*** *you connect the device.*

Installing the Windows Mobile Device Center

Windows Vista includes a basic connectivity driver for Windows Mobile devices. This driver allows you to transfer files from the device to your PC.

To install software onto a Windows Mobile-based device, or to use the more advanced desktop synchronization features with your device, you must install Windows Mobile Device Center 6 onto your office computer.

You can download the Windows Mobile Device Center from the Microsoft website at www.microsoft.com/windowsmobile/devicecenter.mspx.

Installing ActiveSync technology

ActiveSync technology may be supplied on a CD with the Windows Mobile-based device, or you can download it from the Microsoft website at www.microsoft.com/windowsmobile.

Tip – If you are installing a translation of the TerraSync software and you want all installation screens to appear in the translated language, install the corresponding translation of the ActiveSync technology. You can download translated versions of the ActiveSync technology from the Microsoft website.

Step 2: Connect the device to a computer

1. Make sure that the device and the computer are switched on.
2. Connect the device to the office computer using either a USB cable connection or Bluetooth® wireless technology.

   For more information on connecting the device to a computer, refer to the documentation for the Windows Mobile-based device.

   When the device is connected, a window appears on the office computer that enables you to manage the connection.

3. If the office computer is running:

- Windows Vista:

a. If the *Autoplay* window appears, close the window.

b. The *Windows Mobile Device Center* window displays the message Connected:

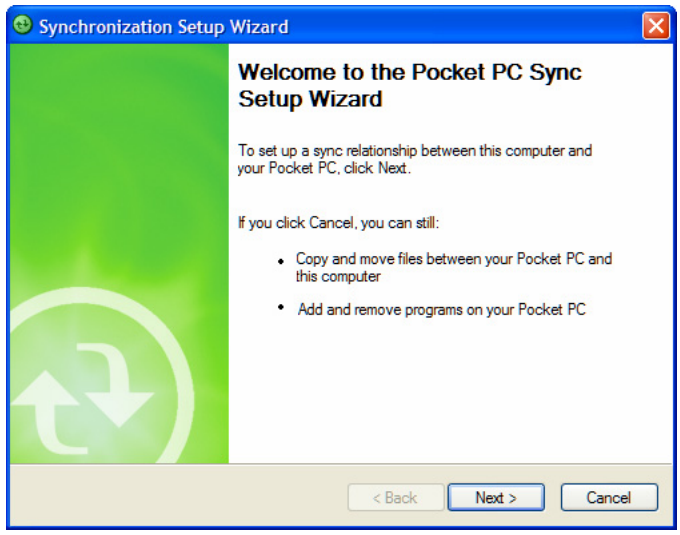
c. Click *Connect without setting up your device*.

d. Use the Windows Mobile Device Center to back up data files and uninstall any previous versions of the software (see Step 3, page 33 and Step 4, page 33).

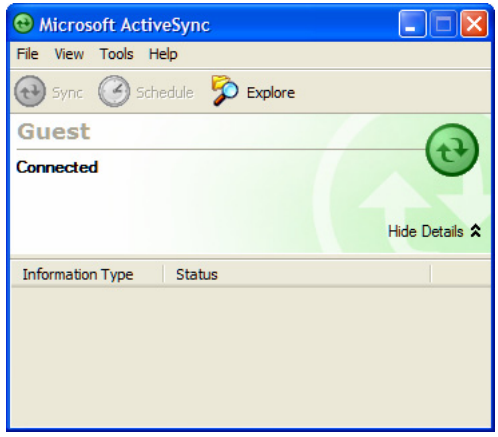
For more information, refer to the *Windows Mobile Device Center Help*.

- Windows XP or 2000:

  a. If the *Synchronization Setup Wizard* appears, click **Cancel** to close the wizard:



  b. The *Microsoft ActiveSync* window displays the message Connected:



c. Use ActiveSync technology to back up data files and uninstall any previous versions of the software (see Step 3 and Step 4 below).

For more information, refer to the *ActiveSync Help*.

Step 3: Back up any TerraSync software data files

Before installing a new version of the TerraSync software, Trimble recommends that you transfer any existing TerraSync software data files to the office computer.

To transfer files using...	do the following...
the Windows Mobile Device Center	click *File Management* and use the Windows Explorer-type window to copy files.
ActiveSync technology	click **Explore** and use the Windows Explorer-type window to copy files.

Step 4: Uninstall any previous versions of TerraSync software

Before installing a new version of the TerraSync software, Trimble recommends that you uninstall any previously installed versions of the TerraSync software from the Windows Mobile-based device and the office computer.

To remove programs...	do the following:
from the device using the Windows Mobile Device Center	click *Programs and Services* and then click *Add/Remove Programs*. **Tip –** If the *Add/Remove Programs* option is not displayed below *Programs and Services*, click *More*. The *Add/Remove Programs* option appears.
from the device using ActiveSync technology	select *Add/Remove Programs* from the *Tools* menu.
from the PC	use the *Add or Remove Programs* tool in the Control Panel.

Step 5: Check that you have enough space on the device

Trimble recommends that you install the TerraSync software to an internal non-volatile storage location, if such a location is available. This leaves more storage and program memory available on the device.

Note – *When installing software onto a device running Windows Mobile 5.0 software, you cannot install to RAM. The default installation location is always an internal non-volatile location.*

Before you install the TerraSync software, make sure that you have enough free space on the device. The TerraSync software requires at least 12 MB of free space. If you are installing it to a secondary internal storage location, such as the GeoExplorer 2003 series handheld's Disk, the TerraSync software requires at least 12MB of free space in that location, plus 5 MB of RAM.

Note – *The installation program cannot determine how much memory is available in the non-volatile storage location. You must ensure that 12 MB is free* ***before*** *you begin the installation.*

If there is not enough memory space on the device, a message appears during installation, indicating the amount of memory left on the device.

Click **Cancel**, remove any unwanted programs or data files from the device, and/or increase storage memory. Then start the installation again.

If memory space in the secondary internal storage location is insufficient, the installation may appear to complete successfully, but error messages may appear when you try to run the TerraSync software. If this happens, make more space available in the secondary storage location, then install the software again.

Step 6: Install the TerraSync software on the device

1. Before you begin, make sure that:
   - you have registered your copy of the software and have made a note of the installation code that you must enter during installation. For more information, see Registering the TerraSync software, page 17.
   - the TerraSync software is not running on the device.
   - you have closed all applications on the device.
2. Insert the *TerraSync Software CD* in the CD drive of the office computer.

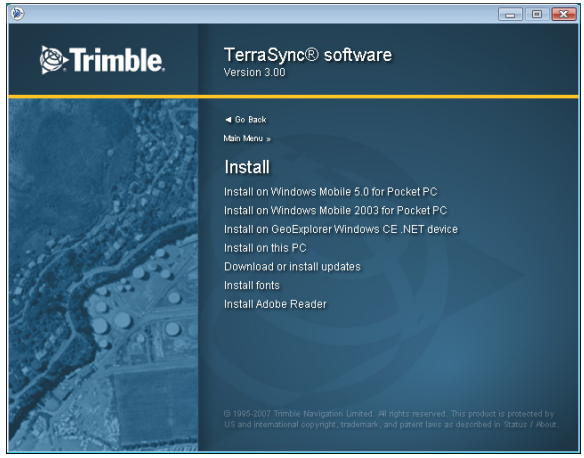
   Alternatively, if you are entitled to an upgrade from a previous version of the TerraSync to version 3.00, you can download the software from the Trimble website. Go to www.trimble.com/terrasync_ts.asp. Click *Downloads* and then click *v3.00 Software.*

   The Setup screen appears:

Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

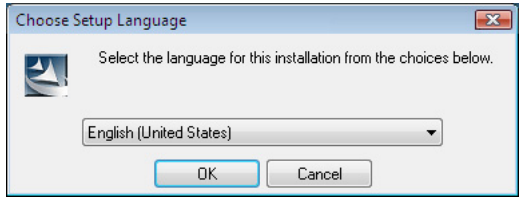
3. Click *Install.*

The Installation screen appears:



4. Select the install option for the type of device that you have connected.

   The *Choose Setup Language* dialog appears.



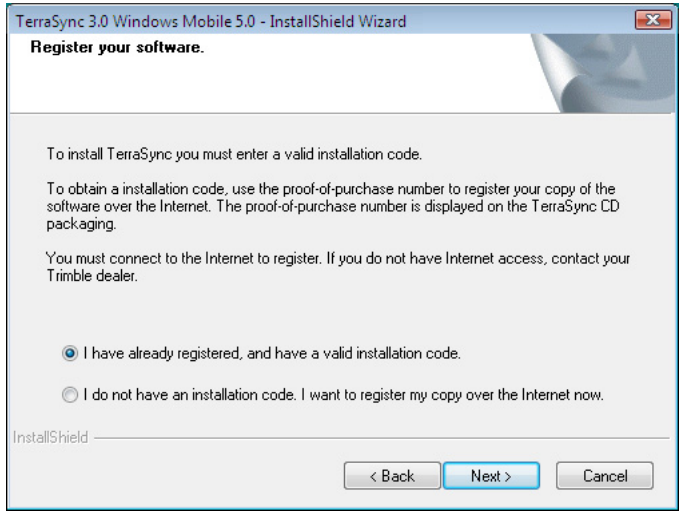
5. Select the language that you require to run the installation. To run the rest of the TerraSync software in a language other than English, after installing the software you must download the appropriate language update from the Web using the Updater utility. For more information, see Step 15 below.

6. Click **Next**.

7. The TerraSync software installation wizard appears. Click **Next**.

8. Read the software license agreement and then click **Yes** to accept it.

The *Register your Software* page appears:



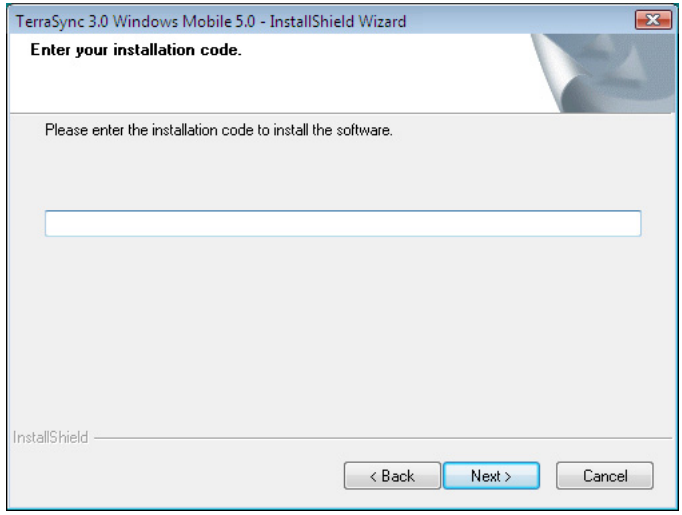
9. Do one of the following:

   – If you have registered the software and obtained your installation code for the software, select the *I have already registered* option and then click **Next**.

   – If you have not yet registered the software and do not have an installation code for the software, select the *I do not have an installation code. I want to register my copy over the Internet now* option and then click **Next**.

     The Register page opens in your default Web browser, displaying the My Trimble account log in. For more information, see Registering the TerraSync software, page 17.

The *Enter your Installation Code* page appears:



10. Enter the installation code assigned to your copy of the TerraSync software when you registered the software and then click **Next**.
11. The *Tutorial* page recommends that you should complete the tutorial in Chapter 4 of this guide before using the software. Click **Next**.
12. The *Start Copying Files* page appears. Click **Next**.
13. If the message Install "Trimble TerraSync" using the default application install directory? appears, click **Yes** to install the software to the default location.

    If the device is running Windows Mobile 5.0 software, you cannot install to main memory. The default installation location is the device's internal non-volatile disk.

    If the device has a non-volatile "internal" storage location, this is used as the default installation location, even if you choose to install to main memory. Internal storage locations include the Disk on a GeoExplorer 2003 series handheld and the Built-In Storage on a Trimble Recon handheld running Windows Mobile 2003 software.

If the device has no non-volatile storage, or only has removable secondary storage such as a CompactFlash card, the default installation location is the main memory (RAM).

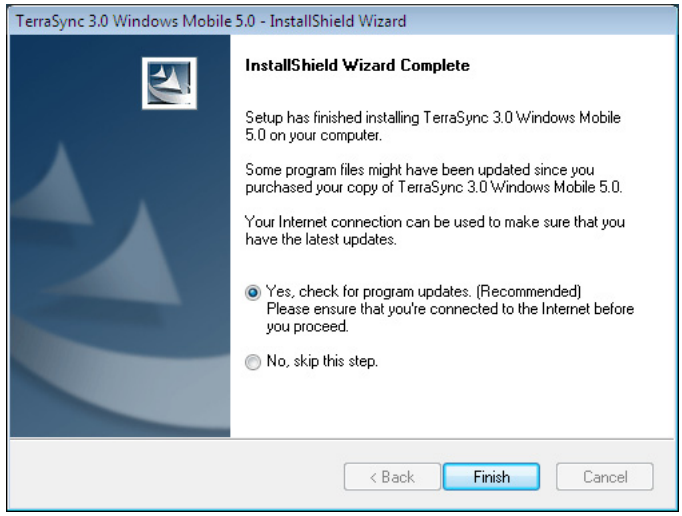
Note – *If an SD (Secure Digital) memory card is inserted in the handheld, the card appears as an installation location option. Trimble recommends that you install software to the handheld's internal storage,* ***not*** *to an SD memory card. If you install software to a card and then remove the card from the handheld, the software will not be available for use.*

14. If you clicked **No** in Step 13, the *Select Destination Media* dialog appears. Click **OK** to proceed with the installation.

    On some Windows Mobile-based devices, such as the Trimble Recon handheld, the message Adding information for "Remove Programs" may remain on the screen for several minutes. ***Do not*** cancel the installation or reset the device while this message is displayed.

    When you install the TerraSync software on a Pocket PC 2003 device, some settings are stored in the main memory (RAM), even if the extension is installed to secondary internal storage. To avoid data loss, the installation program automatically backs up the main memory immediately after installing the TerraSync software.

The final page of the installation wizard shows *InstallShield Wizard Complete*:



15. Trimble recommends that you click the *Yes, check for program updates* option and then click **Finish**.

    The TerraSync Updater utility appears. Use the utility to download the latest software updates and documentation from the Trimble website.

    If you selected a language other then English in the *Choose Setup Language* dialog (see Step 5 above), and you want to run the rest of the TerraSync software in that language, the Updater utility checks for available language files in the appropriate language.

    Once you have downloaded files, you can install them immediately, or you can run the Updater utility later and select the downloaded files that you want to install.

Step 7: Install fonts on the Windows Mobile-based device

When you install a translation of the TerraSync software on a Windows Mobile-based device, you must also install a TerraSync language font if both of the following are true:

- You have installed the TerraSync software in one of the following languages:
  - Chinese
  - Japanese
  - Korean
- The language version of the operating system does not match the language of the TerraSync software (for example, if you have installed the Japanese TerraSync software onto an English Windows Mobile-based device)

CAUTION – *Do not* install the Japanese font on a Windows Mobile-based device with the Japanese version of the operating system installed. This can cause software errors on the device.

Tip – If you see squares or unusual characters instead of characters from the appropriate language, you need to install a font.

Chinese, Japanese, Korean, or Russian TerraSync software on an ***English*** (or other foreign) Windows Mobile-based device does not recognize Asian or Cyrillic characters entered using a keyboard. This is because the English device cannot convert the Unicode characters to multi-byte characters. However, Japanese TerraSync software running on a Japanese Windows Mobile-based device recognizes Japanese characters correctly.

Cyrillic characters, from data dictionaries created in the GPS Pathfinder Office software using Russian Windows, are not displayed correctly in Russian TerraSync software. However, this text displays correctly when transferred back to the GPS Pathfinder Office software. Data dictionaries created in the GPS Pathfinder Office software using Chinese, Japanese, or Korean Windows are displayed properly.

Tip – The Trimble GPS Pathfinder font is installed automatically when you install the TerraSync software. This font includes symbols that you can use to represent point features on the map. If you want to use other symbol fonts for point features, install the additional fonts manually.

To install a TerraSync language font on a Windows Mobile-based device:

1. Uninstall any previous versions of the font.

CAUTION – On some Windows Mobile-based devices, you cannot delete Asian language fonts in the usual way. To remove such fonts, you may need to perform a hard reset of the device. A hard reset removes ***all*** software that is not pre-installed on the device by the manufacturer.

2. Make sure that you have enough free memory to install the font. TerraSync language fonts require 9 to 10 MB of free memory. For more information, see Installing the TerraSync software on a Windows Mobile-based device, page 28.
3. Insert the *TerraSync Software CD* in the CD drive of the office computer.

   Alternatively, if you are entitled to an upgrade from a previous version of the TerraSync to version 3.00, you can download the software from the Trimble website. Go to www.trimble.com/terrasync_ts.asp. Click *Downloads* and then click *v3.00 Software.*

   The Setup screen appears:

Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

4. Select the *Install* option.
5. Select the *Install fonts* option.
6. Select the option for the language that you require.
7. Follow the instructions on the screen to install the font.

Note – *TerraSync fonts should always be installed to RAM (main memory). Do not install fonts to a secondary internal storage location (such as the Disk on a GeoExplorer series handheld), or to a removable storage device.*

8. When the installation is complete, perform a ***soft*** reset of the device.

   For information on how to perform a soft reset, refer to the documentation for the Windows Mobile-based device.

Installing the TerraSync software on a Windows PC

This section describes how to install the TerraSync software on a Windows PC, such as a laptop or a Tablet PC.

The installation procedure comprises the following steps:

1. Back up any TerraSync software data files.
2. Uninstall any previously installed versions of the TerraSync software.
3. Install version 3.00 of the TerraSync software.

More information about each step is provided below.

Step 1: Back up any TerraSync software data files

Before installing a new version of the TerraSync software, Trimble recommends that you transfer any TerraSync software data files to a safe storage location.

Step 2: Uninstall any previous versions of TerraSync software

Before installing a new version of the TerraSync software, Trimble recommends that you uninstall any previously installed versions of the TerraSync software.

Step 3: Install the TerraSync software on the field computer

1. Before you begin, make sure that:
   - you have registered your copy of the software and have made a note of the installation code that you must enter during installation. For more information, see Registering the TerraSync software, page 17.
   - the TerraSync software is not running on the computer.
   - you have closed all open windows programs on the PC.
2. Insert the *TerraSync Software CD* in the CD drive of the office computer.

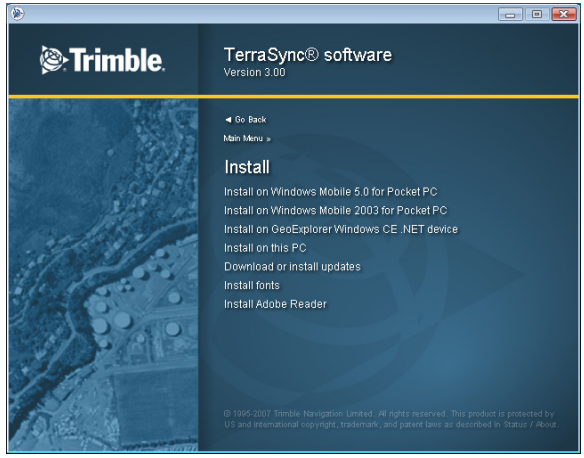
   Alternatively, if you are entitled to an upgrade from a previous version of the TerraSync to version 3.00, you can download the software from the Trimble website. Go to www.trimble.com/terrasync_ts.asp. Click *Downloads* and then click *v3.00 Software.*

   The Setup screen appears:

Note – *If this screen does not appear, select Autorun.exe from the CD drive folder.*

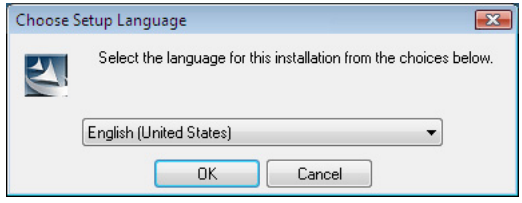
3. Click *Install.*

The Installation screen appears:



4. Select the *Install on this PC* option.

   The *Choose Setup Language* dialog appears.



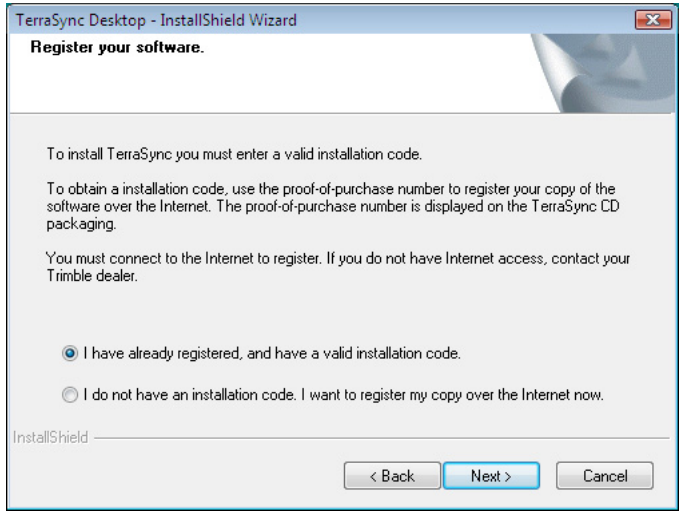
5. Select the language that you require to run the installation. To run the rest of the TerraSync software in a language other than English, after installing the software you must download the appropriate language update from the Web using the Updater utility. For more information, see Step 14 below.

6. Click **Next**.

7. The TerraSync software installation wizard appears. Click **Next**.

8. Read the software license agreement and then click **Yes** to accept it.

The *Register your Software* page appears:



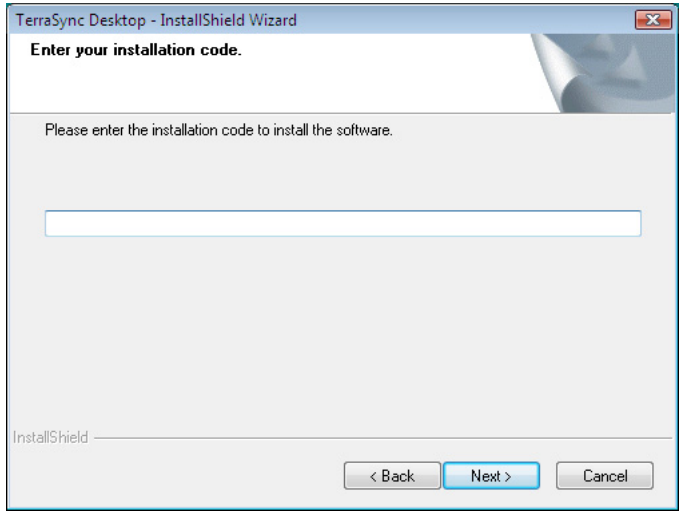
9. Do one of the following:

   – If you have registered the software and obtained your installation code for the software, select the *I have already registered* option and then click **Next**.

   – If you have not yet registered the software and do not have an installation code for the software, select the *I do not have an installation code. I want to register my copy over the Internet now* option and then click **Next**.

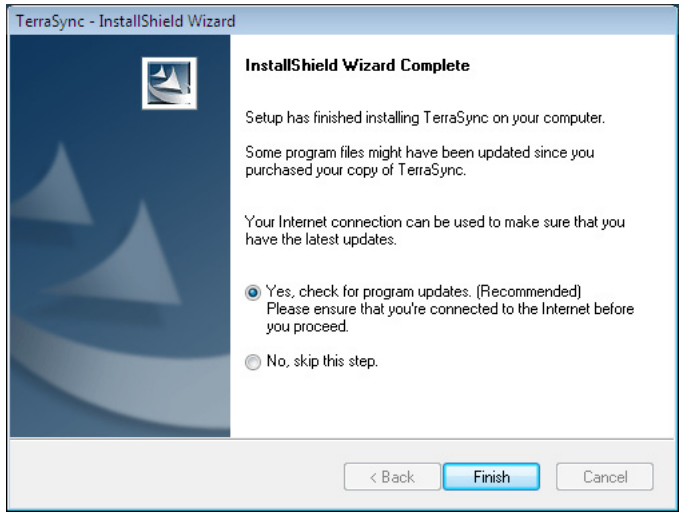
     The Register page opens in your default Web browser, displaying the My Trimble account log in. For more information, see Registering the TerraSync software, page 17.

The *Enter your Installation Code* page appears:



10. Enter the installation code assigned to your copy of the TerraSync software when you registered the software and then click **Next**.
11. In the *Choose Desktop Software Location* page, select the folder where the setup will install the program files and then click **Next**.
12. The *Tutorial* page recommends that you should complete the tutorial in Chapter 4 of this guide before using the software. Click **Next**.
13. The *Start Copying Files* page appears. Click **Next**.

The final page of the installation wizard shows *InstallShield Wizard Complete*:



14. Trimble recommends that you click the *Yes, check for program updates* option and then click **Finish**.

    The TerraSync Updater utility appears. Use the utility to download the latest software updates and documentation from the Trimble website.

    If you selected a language other then English in the *Choose Setup Language* dialog (see Step 6 above), and you want to run the rest of the TerraSync software in that language, the Updater utility checks for available language files in the appropriate language.

    Once you have downloaded files, you can install them immediately, or you can run the Updater utility later and select the downloaded files that you want to install.

Updating the TerraSync software

Trimble recommends that you check for software updates during the installation process .

To check for software updates at any other time, use the TerraSync Updater utility provided on the *TerraSync Software CD*.

For more information about the TerraSync Updater utility, refer to the *TerraSync Updater Utility Help*.

Compatible GPS receivers

You can connect a field computer running version 3.00 of the TerraSync software to any of the following GPS receivers:

- GeoExplorer® series handhelds with an integrated GPS receiver:
  - GeoXH™ handheld
  - GeoXM™ handheld
  - GeoXT™ handheld
- GPS Pathfinder series receivers:
  - ProXT™ receiver
  - ProXH™ receiver
  - Pro XRS receiver
  - Pro XR receiver
  - XB receiver
  - XC receiver
- Recon® GPS CF Card receiver
- The following Trimble survey receivers:
  - 5800 receiver (firmware version 2.23 or later)
  - R8 receiver (firmware version 2.23 or later)

– R8 GNSS receiver (firmware version 3.00 or later)

Connecting to a GPS receiver

You can connect the GPS receiver to a port on the field computer. using one of the options described in Table 2.1.

Note – *To use GPS positions from the integrated GPS receiver when the TerraSync software is installed on a GeoExplorer series handheld, configure the TerraSync software to connect to GPS on COM3.*

Table 2.1 GPS receiver connection methods

Port	Connection method
Bluetooth port	Use the Bluetooth management software provided with your field computer and the GPS receiver to configure and then establish the Bluetooth wireless connection.
Standard RS-232 serial (COM) port	Connect the GPS receiver cable to the curly straight-through cable. Trimble recommends that you use the cable with P/N 45052 to protect the field computer from power supplied by the receiver. Connect the curly straight-through cable to the field computer.
Customized serial (COM) port	Connect the GPS receiver cable to the null modem adaptor (P/N 43197). The adaptor changes gender, and also protects the field computer from power supplied by the receiver. Connect the null modem adaptor to the data download cable that was supplied with the field computer. Connect the data download cable to the field computer.
CompactFlash serial port	Connect a CompactFlash serial adaptor to the CompactFlash port. Then connect as for a standard COM port. ***Note –*** *A field computer uses more power when a GPS receiver is connected to its CompactFlash serial port. This type of connection will discharge the battery in the field computer more quickly.*

Powered connections

CAUTION – Using COM port cabling that supplies power to the field computer can cause problems with, or even permanent damage to, the field computer. Some GPS receivers supply power, and some cables transfer power through one or more of their pins. Trimble ***strongly recommends*** that you protect the field computer by connecting either the null modem adaptor (P/N 43197) or the curly straight-through cable (P/N 45052) to the receiver cable. These two connectors do not supply power, so they will protect the field computer from power output by the receiver.

If a powered connection is acceptable or necessary, you can connect directly to the receiver, or you can use the curly straight-through cable P/N 30236 instead of cable P/N 45052. If you are unsure whether a powered connection will cause damage, refer to the user manual for the field computer or consult the manufacturer before using P/N 30236.

Connecting to external real-time correction devices

To connect to a GPS receiver and an external real-time correction device such as a GeoBeacon receiver, use one of the following options:

- If you are using a serial cable connection to both receivers, use a splitter cable.
- If the field computer has two Bluetooth ports, you can connect to both the GPS receiver and the real-time correction device using Bluetooth connections.
- If the field computer has only one Bluetooth port, use Bluetooth wireless technology to connect the real-time correction device to the GPS receiver, and then use Bluetooth wireless technology to connect the GPS receiver to the field computer. Alternatively you can use a combination of Bluetooth wireless technology and cabling.

For more information, refer to the documentation provided with the GPS receiver and the real-time correction device.

CHAPTER

3

User Interface and Data Entry

In this chapter:

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

Getting help

The *TerraSync Software Help* describes the fields and commands for each screen. For detailed information about using the TerraSync software that is not provided in the Help or in this document, refer to the *TerraSync Software Reference Manual*.

To access the TerraSync software context-sensitive help from:

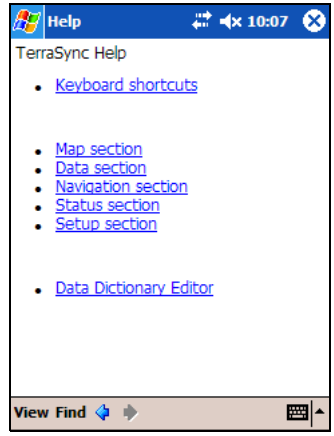
- a Windows Mobile-based device, tap  and then select *Help*.

  If you tap  and then select *Help* on the device when the TerraSync software is not running, the main Help Contents topic appears. Select *TerraSync* to open the Contents topic of the TerraSync Help.

- a PC, press F1. Alternatively, hold down the Alt key on the keyboard and then press H.

The 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 Help* lists all the main topics.To access this page, select the *Contents* link at the bottom of any Help page.



Windows operation

You can install the TerraSync software on a desktop, laptop, or Tablet PC instead of on a Windows Mobile-based device.

This manual describes the TerraSync software as it appears on a portrait orientation handheld with a 240 × 320 pixel screen (see Documentation conventions, page 10). On a PC, some software items 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 Panes, page 94). For more information, refer to the *TerraSync Software Reference Manual*.

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

Windows Mobile software operation

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

For information about some Windows Mobile software features that are useful when using the TerraSync software, see:

- Adjusting the screen contrast, page 56
- Working with other applications, page 56
- On-screen keyboards, page 57
- Device Lock utility, page 59

Adjusting the screen contrast

You can change the screen contrast on any Windows Mobile-based device, to adjust to indoor or outdoor operation. Many 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 device.

Some devices, such as the GeoExplorer series handheld, have a frontlight or backlight instead of contrast control. For information on changing the lighting level, refer to the documentation for the device.

Working with other applications

The Windows Mobile software used by Windows Mobile-based devices is similar to a desktop Windows operating system. You can use the same methods on the 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, tap the program icon in the taskbar. Alternatively, if the device has a keyboard, you can use the Alt + Tab key combination.

Some programs on a Windows Mobile-based device 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 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 Windows Mobile-based device:

1. On the Windows Mobile taskbar, tap .
2. Select *Settings* / *System* / *Memory*.

3. Select the *Running Programs* tab.
4. Highlight the task you want, then do one of the following:
   - To shut down the task, tap **Stop**.
   - To switch to the selected task, tap **Activate**.
5. Tap **OK** to close the *Running Programs* dialog.

When the TerraSync software is already running on a device, tapping  / *Programs* / *TerraSync* does not start the software a second time. Instead, the TerraSync software becomes the active program. Use this method to switch back to the TerraSync software from another application.

Tip – Some 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 devices do not have a physical keyboard. Instead, enter text using an ***on-screen keyboard***. 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 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 59) to enter numeric data such as the height of a feature or a distance.

If the 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:

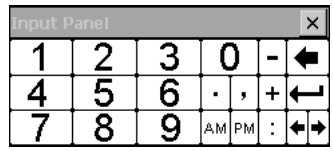
1. Tap the arrow on the right end of the on-screen keyboard button.

   A list of installed keyboards pops up. The currently selected keyboard is indicated by a bullet or check mark.

2. Tap the name of the keyboard required.

   The pop-up list closes automatically.

Trimble numeric keyboard



When you install the TerraSync software on a 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 device as well as to the TerraSync software.

Note – *The Trimble numeric keyboard is only available on Windows Mobile-based devices that use on-screen keyboards, such as a Pocket PC.*

Device Lock utility

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

To lock the device, from the *Today* screen tap *Device unlocked*. The Today screen shows *Device locked*, and the *Unlock* notification appears in the left corner of the menu bar.

Tip – If Device unlocked does not appear in the Today screen, you may need to add it to the items that appear in the Today screen. To do this, tap / *Settings* / *Personal* / *Today*. Tap the *Items* tab and make sure that the checkbox next to *Device Lock* is selected.

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 device is locked. For example, you could lock the

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, in the *Today* screen tap the *Unlock* notification in the left corner of the menu bar and then tap **Unlock**.

Starting and exiting the TerraSync software

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

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

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

To exit the TerraSync software, tap the Close button in the upper right corner of any TerraSync screen.

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 Windows Mobile-based device, tap and then tap the TerraSync icon on the recently-used programs list.
- On a Windows PC, tap the TerraSync icon in the system tray in the taskbar.

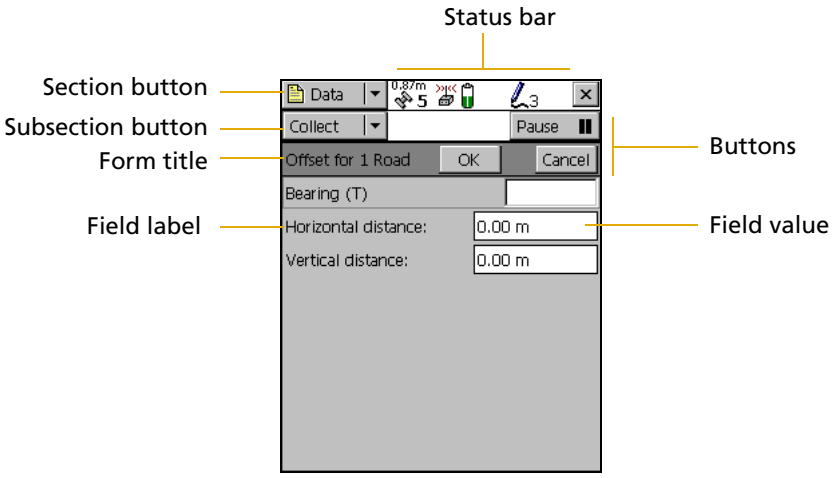
Section structure

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: • 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. Create and edit waypoints.
 Status	View information about: • 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.

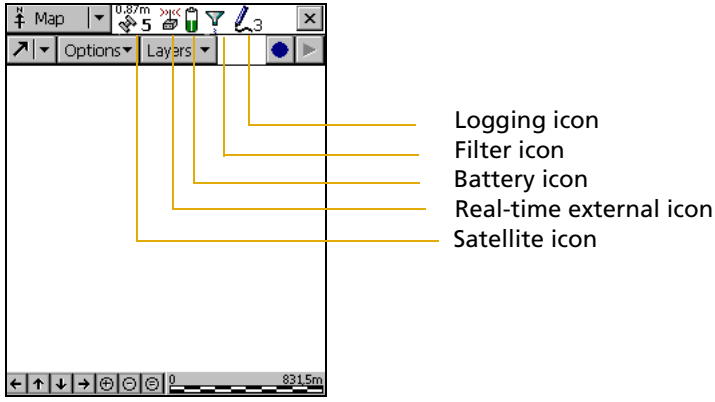
The TerraSync software display

The screen below shows elements that are common to all screens in the TerraSync software:



Status bar

The status bar appears at the top of the TerraSync software screen and provides basic status information about the connected GPS receiver. For information about how to connect to a GPS receiver, see



The status bar is always visible, but the icons displayed depend on the current status of the system. Table 3.1 shows the icons that can appear.

Table 3.1 Status bar: Icons

Icon	Name	Description
	Battery icon	The left half of this icon indicates the charge level of the GPS receiver battery, if one is connected. If the connected receiver does not provide battery status information to TerraSync, the left half of the battery icon is empty. • The right half indicates the charge level of the field computer battery. When the battery of the GPS receiver or field computer is fully charged, the corresponding half of the battery icon appears green. The level of green drops as the corresponding battery charge level drops. • When the power level is low, the corresponding half of the battery is yellow. • When the power level is critical, the corresponding half of the icon is red and the icon flashes. If the GPS receiver is powered by the field computer (for example a GPS Pathfinder XC receiver) or is integrated with the field computer (for example a GeoExplorer series handheld), both halves of the battery icon show the same level and indicate the battery status of the field computer.
	Satellite icon	Shows whether the geometry of the satellites is good or bad, as configured in the GPS settings area of the software. The satellite icon flashes when the geometry of the satellites (their PDOP or HDOP) is poor. The number below the icon indicates how many satellites are being used to compute GPS positions. The number flashes when not enough satellites are available. You need at least four satellites to compute GPS positions.
	Current Estimated Accuracy (CEA)	(This is the number above the satellite icon.) Shows the estimated horizontal accuracy of the current GPS position, in meters. The value shown depends on several factors, including satellite geometry and the type of GPS receiver that is connected. ***Note –*** *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.*

Table 3.1 Status bar: Icons (continued)

Icon	Name	Description
	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 *Units* 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	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. If no icon appears in this position, no GPS receiver is connected.
	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 icon	Shows that the TerraSync software is receiving real-time corrections from an external beacon receiver such as a GeoBeacon receiver.
	Real-time beacon icon	Shows that the TerraSync software is receiving real-time corrections from a beacon.
	Real-time satellite 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.

Note – *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 3.1 Status bar: Icons (continued)

Icon	Name	Description
	Filter icon	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, refer to the *TerraSync Software Reference Manual*.
	Logging icon	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. The width of the pen indicates code or carrier logging.
	H-Star logging icon	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.
	Carrier logging icon	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).
	Carrier time	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.
	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.

Table 3.1 Status bar: Icons (continued)

Icon	Name	Description
	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 3.2 shows the status bar icons and the tooltips that describe them.

Table 3.2 Status bar: Tooltips

Icon	Behavior	Tooltip
	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

Table 3.2 Status bar: Tooltips (continued)

Icon	Behavior	Tooltip
	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
	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

Table 3.2 Status bar: Tooltips (continued)

Icon	Behavior	Tooltip
	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%)
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.*		
	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
	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 item 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:

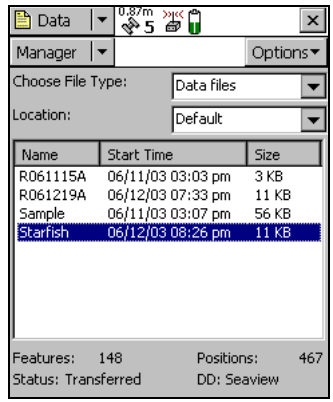
- Screens, page 70
- Graphical screens, page 70
- Forms, page 71

The TerraSync software screens also have the following features:

- Lists, page 72
- Buttons, page 73
- Data entry fields, page 78
- Auto-incrementing attributes, page 83
- Pop-up messages, page 84
- Sound, page 85
- Color, page 89

For more ways to interact with the software if the field computer has a keyboard, see Keyboard shortcuts, page 76.

Screens



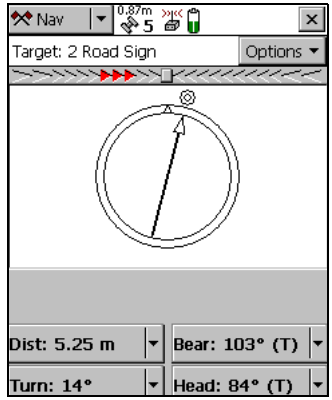
Use screens to view information in a list or table, or to make selections that provide access to other areas in the software. A screen usually displays information that you cannot edit directly.

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

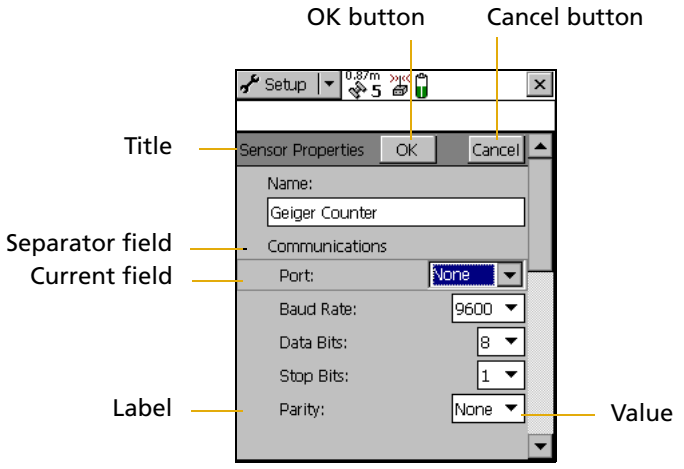


Use graphical screens to view information graphically. You cannot enter data in a graphical screen, and you cannot edit the information displayed.

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 78.

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.

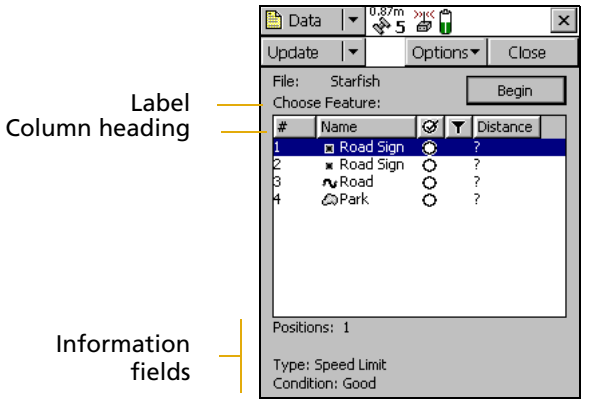
When you have finished browsing through the form, or have finished editing fields in the form, tap **OK** to accept the changes you have made and return to the previous screen.

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.



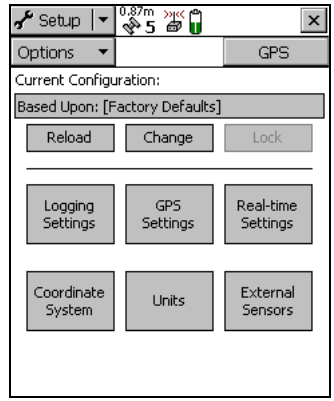
Often information fields are displayed at the bottom of the screen, below the list. They provide useful information about the item currently highlighted in the list.

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.

Tap a column heading to sort items 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

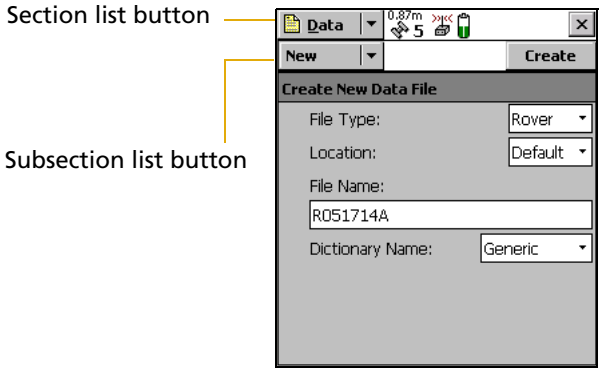


Many forms and screens in the TerraSync software contain buttons. When you tap a button, the TerraSync software carries out the appropriate command or opens a new screen. For example, if you tap **GPS Settings** in the *Setup* screen, the *GPS Settings* form appears.

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 73, and Menu buttons, page 75.

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.

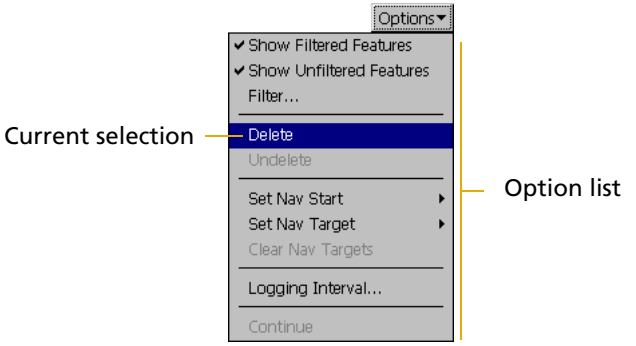
The following list buttons appear in the TerraSync software:

- 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 75***.**

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 *Edit dictionary* form in the Data section (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 73***.**

Keyboard shortcuts

If you are using a field computer that has a keyboard, such as a notebook computer or a Trimble Ranger™ handheld, 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 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 Option list is open in the Setup section, TerraSync disconnects from the GPS receiver. However, if you press D in the Options list of the File Manager subsection, TerraSync deletes the selected file.

If the screen size of the field computer 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 TerraSync	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
Move up	Map	Alt+up arrow key; Alt+8
Move down	Map	Alt+down arrow key; Alt+2

Action	Section	Keyboard shortcut
Move left	Map	Alt+left arrow key; Alt+4
Move right	Map	Alt+right arrow key; Alt+6
Open Existing File subsection	Data	Alt+X
Open File Manager subsection	Data	Alt+G
Open Satellite Info subsection	Status	Alt+F
Open Receiver subsection	Status	Alt+V
Open Real-time subsection	Status	Alt+A
Open Plan subsection	Status	Alt+P
Open Sensor subsection	Status	Alt+R
Open Comms subsection	Status	Alt+O
Open UTC Time subsection	Status	Alt+I
Open About subsection	Status	Alt+B

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 field types can appear:

- Text fields (see page 79)
- Numeric fields (see page 79)
- Menu fields (see page 80)
- Time fields (see page 80)
- Date fields (see page 81)
- Filename fields (see page 81)

If the field computer has a physical keyboard, use it to enter text or numbers, just as you would in any Windows program. If you do not have a keyboard, use the 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 On-screen keyboards, page 57.

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 On-screen keyboards, page 57.

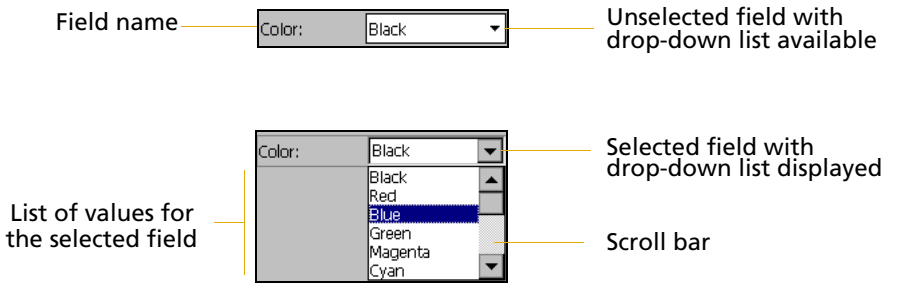
Numeric fields

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 59) 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 83.

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. Enter a value manually using an on-screen or physical keyboard, or select a value from the drop-down list.

Time fields

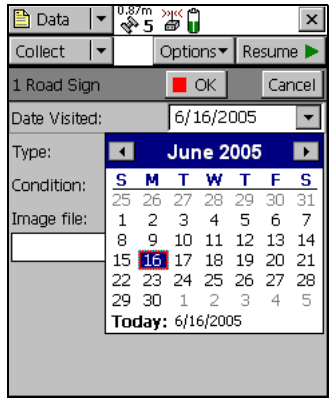
Enter time values manually using an on-screen or physical keyboard, or select the current time from a drop-down list. If the field computer uses on-screen keyboards, the Trimble numeric keyboard pops up when you select a time field.

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

Enter a date value manually using the physical keyboard, or select 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 required 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

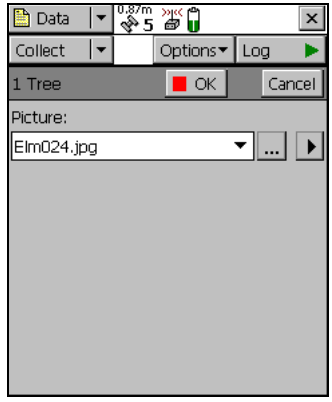
A filename field lets you attach an existing file to a feature.

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.

Enter a filename manually using the physical keyboard, or 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 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 Windows Mobile-based 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 settings of the recording software 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

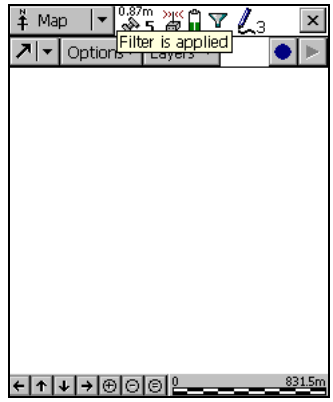
To make an attribute auto-incrementing, you must set an increment value in the data dictionary. You can do this in the Data Dictionary Editor utility in the GPS Pathfinder Office software, or data dictionary editor in the Data section. For more information on making an attribute auto-incrementing, refer 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 TerraSync. 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 an icon in the status bar (see page 62), 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 65) 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, tap 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 (refer to 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 62) flashes, and the Low GPS battery (see page 87) sound is played.

Note – *Battery-related events do not sound if you are using a GPS Pathfinder XB receiver, because the TerraSync software does not monitor the battery status of this receiver.*

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.
Position snapped	Success	The digitized position has been snapped to a nearby existing position.
Real time OK	Success	The connection to the specified source of real-time differential correction has been regained.

Event	Sound category	Description
Carrier lock acquired	Success	Carrier lock has been acquired. The TerraSync software has started logging carrier or H-Star data.
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.
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  / *Settings* / *Personal* / *Sounds and Notifications*.
2. In the *Enable sounds for* group, select or clear the *Applications* check box to enable or disable warning and success sounds.
3. 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. To change any of the sounds used, replace 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	GPSBatteryIsDead.wav
Low GPS battery	GPSBatteryIsLow.wav
GPS connected	GPSIsConnected.wav
GPS OK	GPSIsOK.wav
Poor geometry	PoorGeometry.wav
Position logged	PositionLogged.wav
Position snapped	PositionSnapped.wav
Real time lost	RealTimeIsLost.wav
Real time OK	RealTimeIsOK.wav
Carrier lock aquired	LockOpened.wav
Carrier lock lost	LockLost.wav

Event	Sound file
Minimum positions stored	StoredMoreThanMinimumPositions.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 63)
- 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.

CHAPTER

4

Software Structure

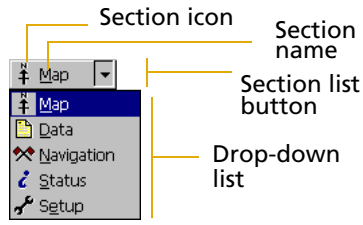
In this chapter:

This chapter describes the main sections of the TerraSync software and provides an overview of the functionality provided by each section.

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 shortcuts to move between sections. See Keyboard shortcuts, page 76.

Sections

The main functions of each section in the TerraSync software are described below:

- ***Data*** section

  The Data section provides forms for entering information about features.

  Use the 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

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

  Use the Map section with the screens in the Navigation section to navigate to specific locations.

- ***Navigation*** section

  The Navigation section provides forms for collecting and editing waypoints, and screens for navigation.

  Use the screens in the Navigation section with the Map section to navigate to specific locations. You can use real-time differential GPS to optimize navigation and provide differential accuracy when in the field.

- ***Setup*** section

  The Setup section provides forms for configuring the TerraSync software.

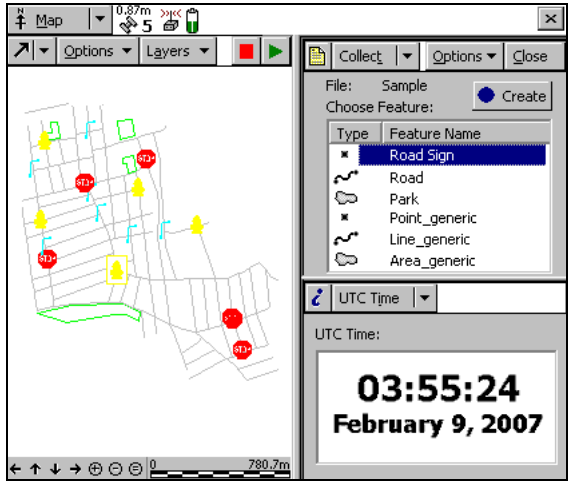
  Use the Setup section to control how the TerraSync software interacts with the GPS receiver and with any real-time correction sources you have configured, and to configure data collection and display settings.

- ***Status*** section

  The Status section contains information screens.

  Use the 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.

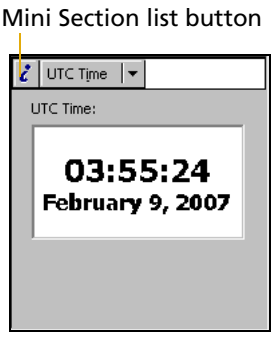
Depending on the screen resolution, up to three panes can be displayed. By default, when the TerraSync software opens, the Map, Data, and Status sections are displayed.

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.

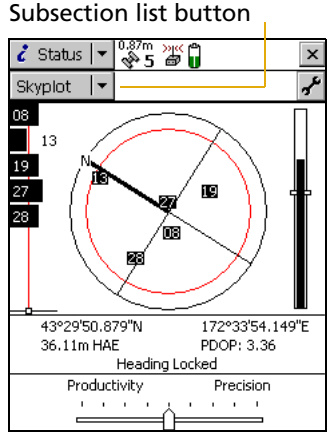


To move a section to a different pane, tap and hold the Mini Section list button. The icon for the section appears. Drag the icon into the pane where you want the section to be displayed. When you drop the icon, the two sections switch position.

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.

Subsection list button



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.

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

Section structure lists

The following 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 Waypoints Background Between Feature GPS GPS Trail Background Files Layer Formatting
Undo	
End Measurement	

Create/End Feature
Log/Pause/Resume

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	**Options**	Offset New Vertex Logging Interval Nest 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 Nest 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		

Navigation section

Navigate	**Options**	Navigation Options			
Waypoints	**Waypoint File List**	**New**	**New Waypoint File Form**		
		Open			
	Waypoint List	**Options**	Set Nav Start		
			Set Nav Target		
			Clear Nav Targets		
			Delete		
			Undelete		
			Edit		
			New		
			Close File		
			New Waypoint Form	**Create From**	GPS
					Map Point
					Selected Point Feature
					Selected Vertex
					Selected Waypoint
			Edit Waypoint Form		

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

CHAPTER

5

Tutorial: Collecting Data

In this chapter:

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 the *GPS Analyst Extension Getting Started Guide*.

Tutorial structure

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 105
- Data collection, page 108
- Processing the data, page 119

Data update:

- Preparing for data update, page 132
- Data update, page 139

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

  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.

  The data collection part of the tutorial begins on page 108.

- Data Update

  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.

  The data update part of the tutorial begins on page 139.

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. See:

- Creating a project, page 105
- The Seaview data dictionary, page 107
- Checking the equipment, page 107

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*.

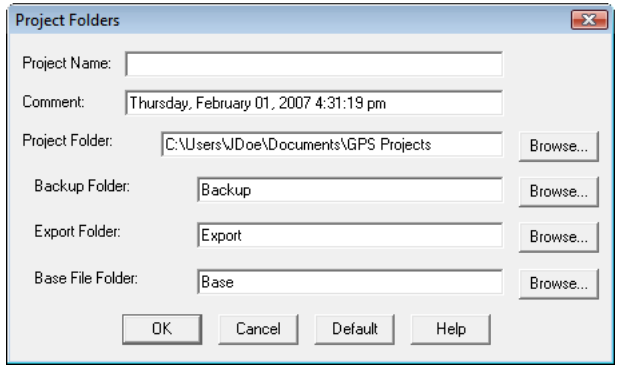
To create a project in the GPS Pathfinder Office software:

1. Start the GPS Pathfinder Office software. To do this, from the Windows Start menu select *All Programs / Trimble / GPS Pathfinder Office / GPS Pathfinder Office*.

   The main window of the GPS Pathfinder Office application appears.

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 press the Tab key.

   The *Project Folder* field is updated to show the default folder for the new project.

Note – *By default all GPS Pathfinder Office software projects are stored in the GPS Projects folder. The default location of the GPS Projects folder depends on the type of Microsoft operating system running on your computer. For more information, refer to the GPS Pathfinder Office Software Help.*

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.

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.

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. See:

- Initial tasks, page 108
- Collecting new data, page 112

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. See:

- Switch on the field computer and start the TerraSync software, page 109
- Get a clear view of the sky, page 109

- Check the GPS status, page 109
- Configuring the GPS slider bar, page 111

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.

Note – *GPS positions may not always be available, particularly in or near buildings, in vehicles,or under tree canopy.*

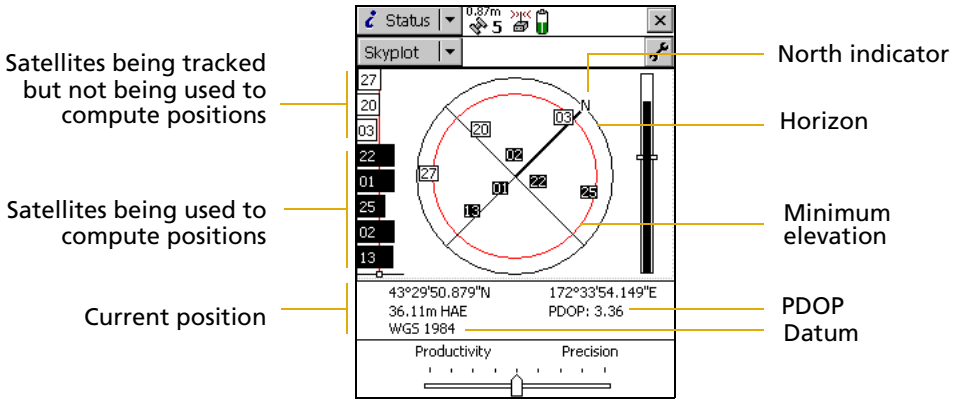
Check the GPS status

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.

To view the GPS status:

1. The *Skyplot* screen appears when you first run the TerraSync software. If this screen is not visible, tap the Section list button and then 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.

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

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.

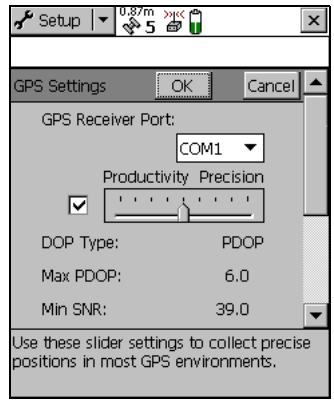
Note – *If you are using a GPS Pathfinder XB or XC receiver, you cannot configure GPS settings. When you open the GPS Settings form, the GPS slider does not appear, and the default settings for these receivers are shown as read-only fields.*

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.

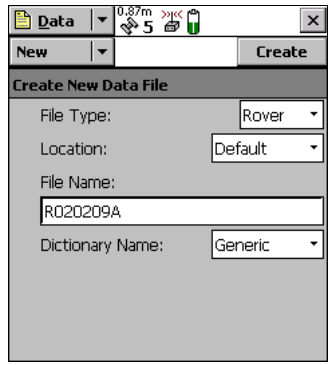
For more information, refer to the *TerraSync Software Reference Manual*.

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 (see page 113)
- Collecting a point feature (see page 114)
- Collecting a line feature with Log Later (see page 115)
- Collecting an area feature (see page 116)
- Ending the data collection session (see page 119)

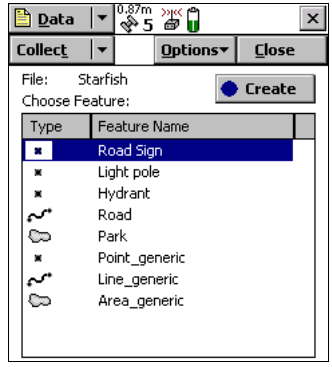
Creating a new data file



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*.

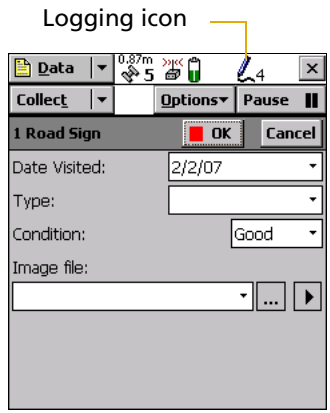
2. In the *Choose Feature* list, highlight Road Sign, and then tap **Create**. The attribute entry form for the Road Sign feature type appears.

   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.

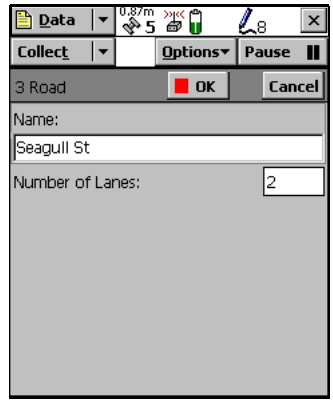
By default, the TerraSync software begins logging GPS positions as soon as you open a new feature. Use the Log Later option to delay logging of positions until you have entered the attributes for the feature, or until you reach the start of the feature.

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.

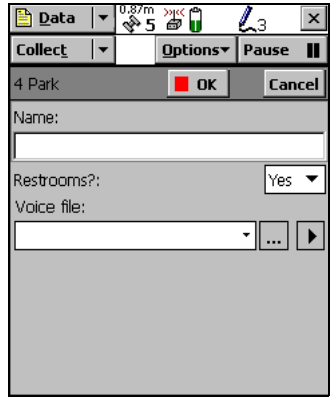
To record an area feature, you need to travel around the perimeter of the area. As you do so, the TerraSync software will log GPS positions at the logging interval set in the data dictionary. These positions are joined together to form the perimeter of the area.

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**.

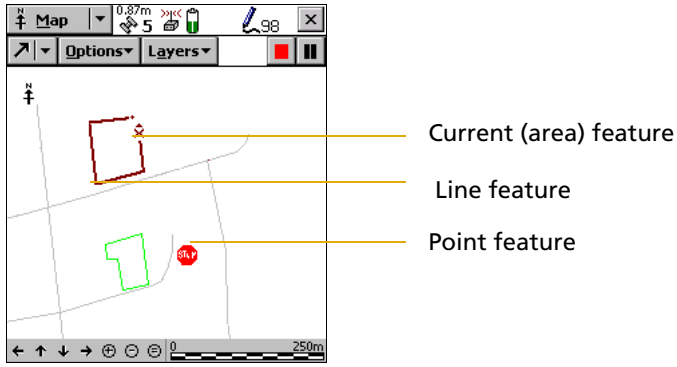
   

   The attribute entry form for the Park feature opens, and the TerraSync software starts to log positions.

   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.
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, refer to the *TerraSync Software Reference Manual*.

6. To view the map while collecting features, 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.



To view the map at different scales, 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.*

7. 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.
8. Enter the attributes of the park. In the *Name* field, enter **Starfish Park**, and from the *Restrooms?* field, select Yes.
9. 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, refer to 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 (see page 120)
- Differentially correcting data (see page 122)
- Viewing data (see page 129)
- Exporting data to a GIS (see page 131)

Transferring data to the office computer

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

Note – *If the TerraSync software and the GPS Pathfinder Office software are installed on the same computer (for example, a laptop PC), you do not need to transfer the data. Skip this step and go straight to* *Differentially correcting data, page 122*.

1. Switch on the field computer and the office computer and connect the two computers.

   If the field computer is a PC, make sure that there is a network connection between the PC and the office computer.

   If the field computer is a Windows Mobile-based device, connect the device to the computer (for example using a USB cable or Bluetooth wireless technology).

   Use either Microsoft ActiveSync technology or the Windows Mobile Device Center to manage the connection between the device and the computer. The software you use depends on the operating system the office computer is running.

   When the device and the computer are connected, one of the following appears on the office computer:

   – If the computer is running Windows Vista, the *Windows Mobile Device Center* window appears and displays the message Connected.

     For more information, refer to the *Windows Mobile Device Center Help*.

   – If the computer is running Windows XP or 2000, the *Synchronization Setup Wizard* appears.

     For more information, refer to the *ActiveSync Help*.

2. In the GPS Pathfinder Office software, select *Data Transfer* from the *Utilities* menu. The *Data Transfer* dialog appears.

3. From the *Device* list, select the appropriate device (GIS Datalogger on Windows Mobile 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.

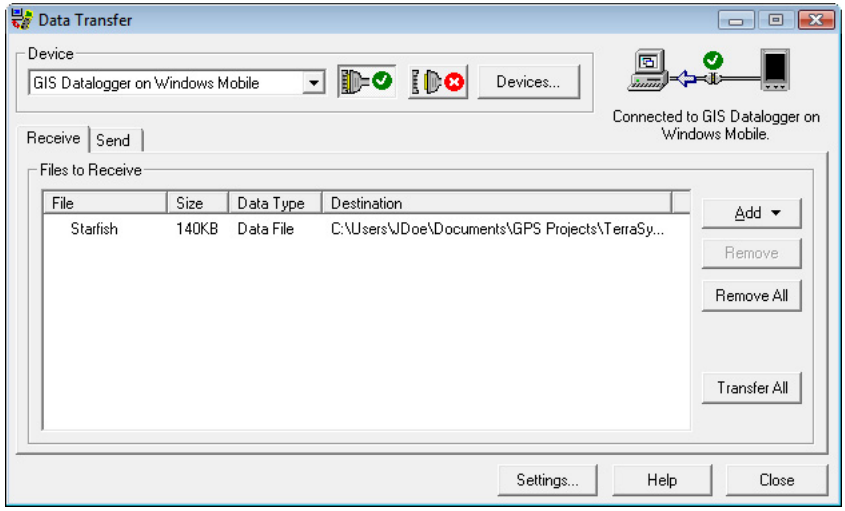
4. Select the *Receive* tab.

5. 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.*

6. The Starfish file appears in the list of files. Highlight this file.

7. Make sure that the *Destination* column shows the correct path to the GPS Projects\TerraSync Tutorial folder you created earlier and then click **Open**. The *Open* dialog disappears and the Starfish file appears in the *Files to Receive* list.



8. Click **Transfer All**. The data file is transferred to the desktop computer.

9. A message box showing summary information about the transfer appears. Click **Close** to close it.
10. Click **Close** to close the Data Transfer utility.

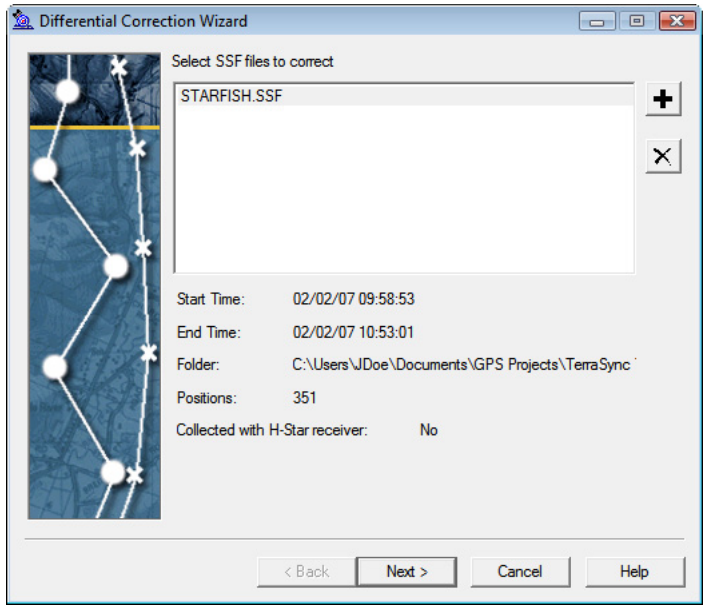
For more information, refer to the *GPS Pathfinder Office Software Help*.

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.

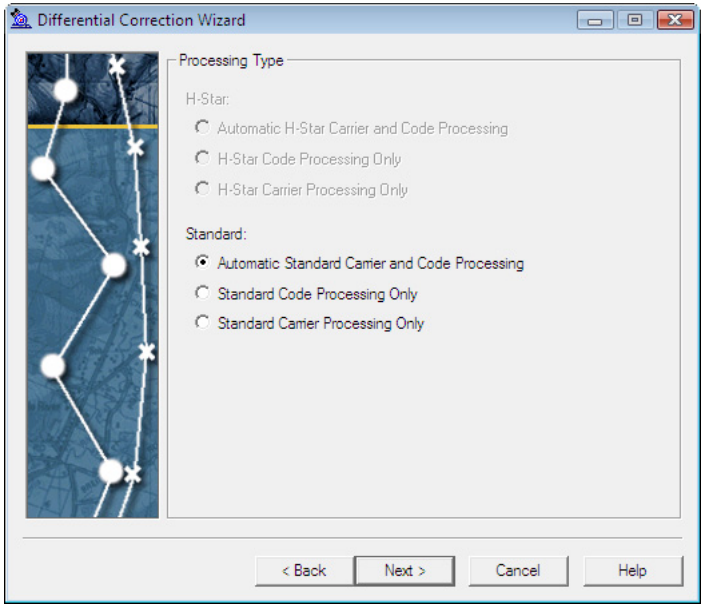
To differentially correct the data file:

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**.

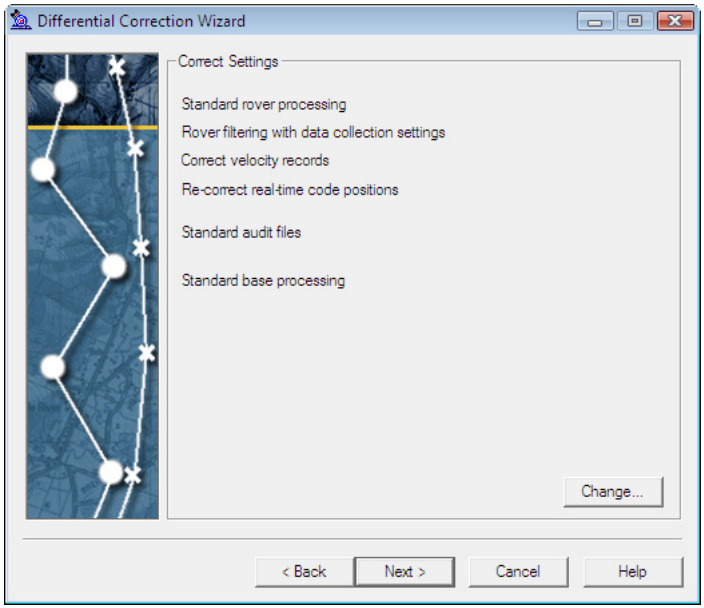
4. Click **Next**. The *Processing Type* screen appears.



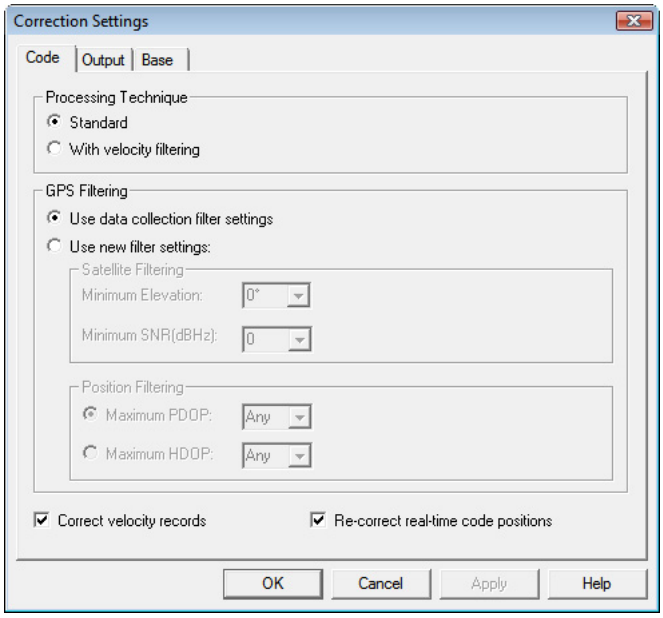
5. Select a processing option. By default, the *Automatic Standard Carrier and Code Processing* option is selected.

Note – *The H-Star processing options are only available if the GPS receiver used to collect the data file has H-Star™ technology. In this example, the tutorial data files were collected with a GPS receiver that does not have H-Star technology.*

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

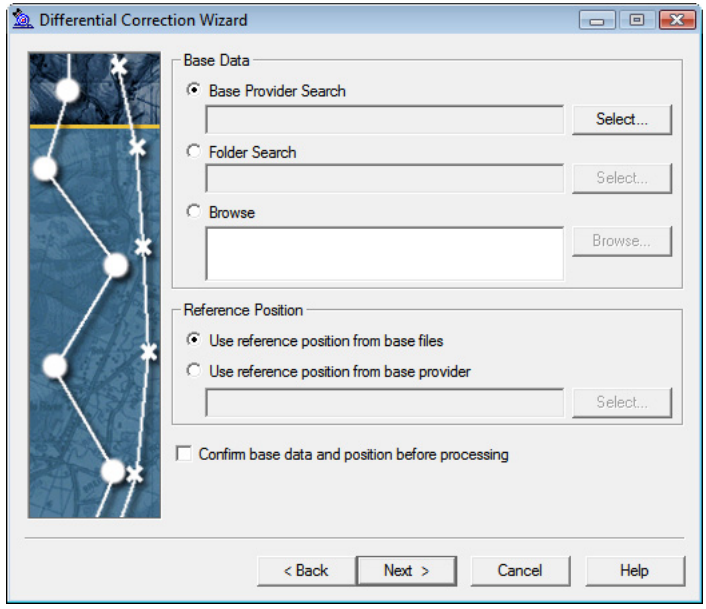


7. To change the correction settings, click **Change**. You can change Code, Output, and Base settings in the *Correction Settings* dialog:



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

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



This screen enables you to:

– Specify the location of the base files.

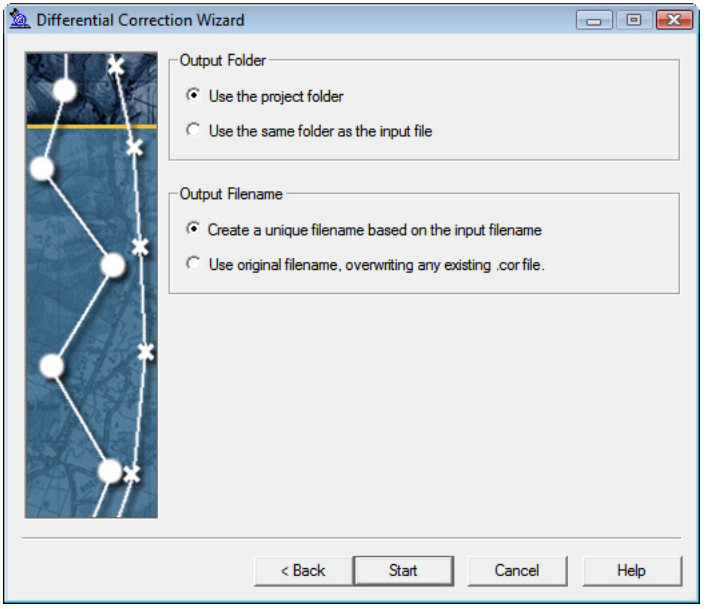
  By default, base files are stored in the base file folder of the current project on your local drive. To change the folder path, click **Browse**.

  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* screen appears.



This screen 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* screen 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 Software Help*.

Viewing data

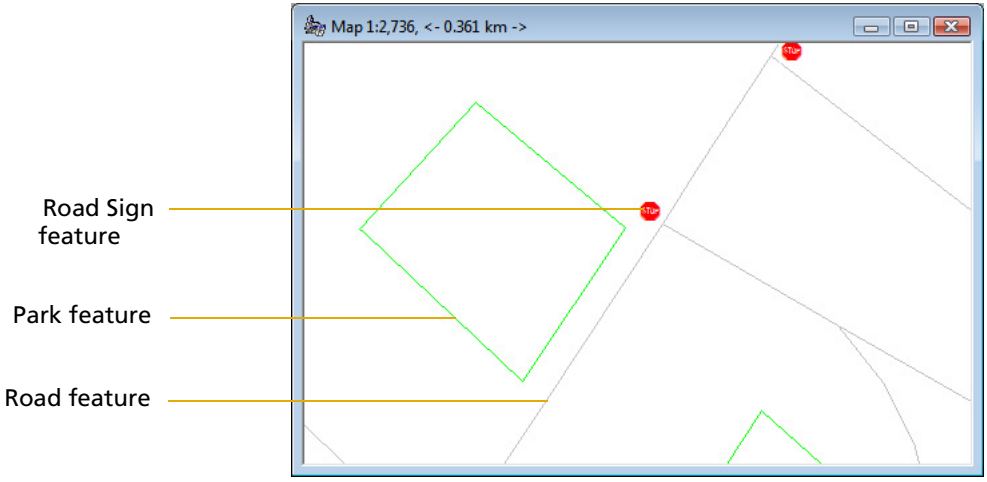
When the data has been transferred and differentially corrected you can display, edit, and plot it using the GPS Pathfinder Office software. The best way to view field data and to verify its integrity is to use the Map window in the GPS Pathfinder Office software. Use the Map window to make graphical 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 (GPS Projects\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.

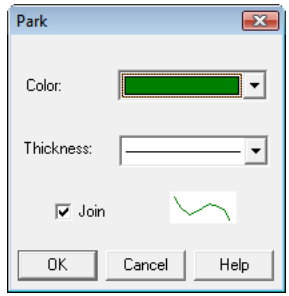
4. Change the color of the Park feature:

   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 dark green.



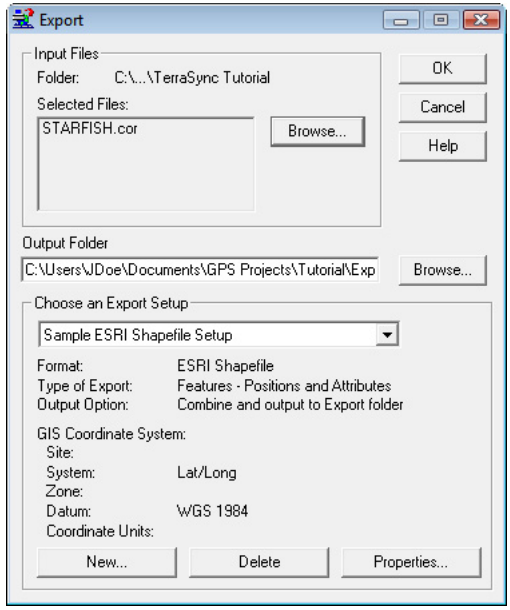
For more information about the GPS Pathfinder Office software Map window display, search for the topic **Map** in the *GPS Pathfinder Office Software Help*.

Exporting data to a GIS

The Trimble Export utility in the GPS Pathfinder Office software converts files that are in SSF format to 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 *Export* from the *Utilities* menu 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 then 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 ESRI 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 Software Help*.

Preparing for data update

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

Some time 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 using the TerraSync software and a real-time correction source to navigate to each sign. The field crew will use the Seaview data dictionary 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. See:

- Creating a data dictionary from existing data files, page 133

- Importing data from a GIS into the GPS Pathfinder Office software, page 134
- Transferring data to the field computer, page 137

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 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 *Data Dictionary Editor* from the *Utilities* menu. 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**.

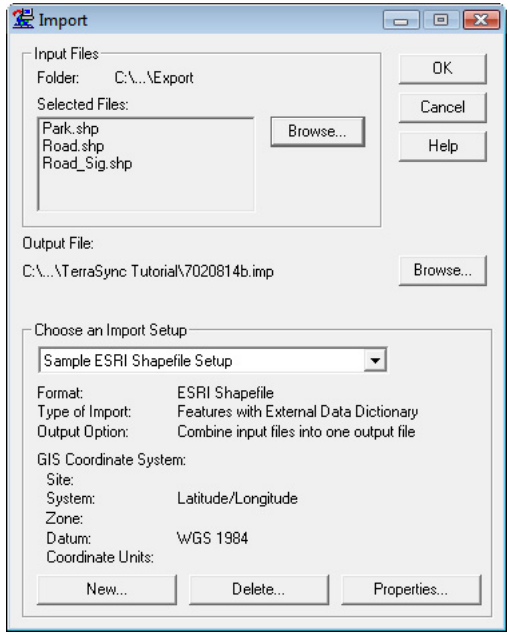
   The *Import From Data File* dialog closes and you are returned to the main *Data Dictionary Editor* window where a new, unsaved data dictionary has been created.
5. Select *File / Save*. The *Save As* dialog appears. The default filename for the new data dictionary is Seaview.ddf.
6. Navigate to the default project folder (GPS Projects) and then click **Save**.

7. In the *Data Dictionary Editor* window, select *File / Exit*.

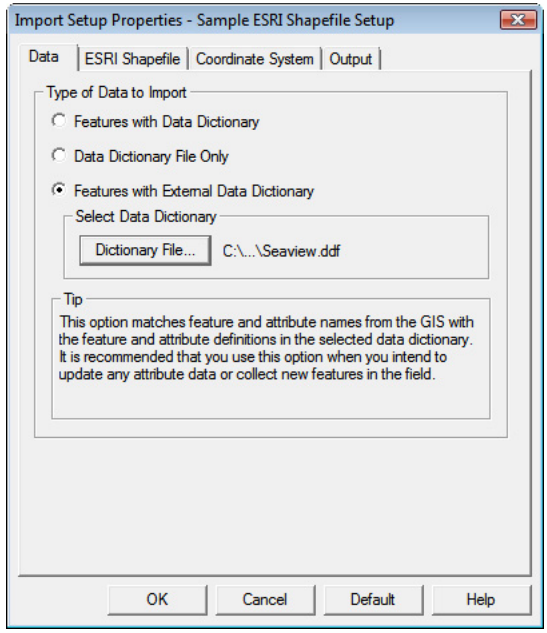
Importing data from a GIS into the GPS Pathfinder Office software

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.

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



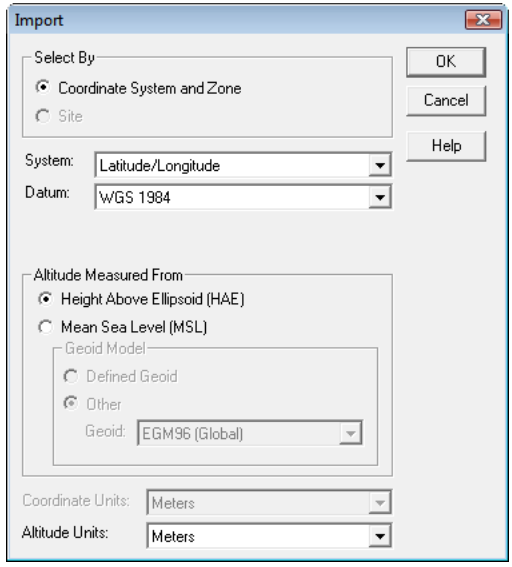
3. The three Shapefiles that you exported at the end of the data collection part of the tutorial appear in the *Selected Files* list. If they do not appear, click **Browse** and locate the folder GPS Projects\TerraSync Tutorial\Export. Select the input files RoadSign.shp, Road.shp, and Park.shp, and 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 then click **Open**.

d. Select the *Coordinate System* tab and then 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. Make sure that the *Height Above Ellipsoid* option is selected in the *Altitude Measured From* group. The settings should look the same as those shown below:



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 Software 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 Data Transfer utility to transfer data between the office computer running the GPS Pathfinder Office software and the field computer running the TerraSync software.

Note – *If the TerraSync software and the GPS Pathfinder Office software are installed on the same computer (for example, a laptop PC), you do not need to transfer the data. Skip this step and go straight to* *Differentially correcting data, page 122*.

1. Switch on the field computer and the office computer and connect the two computers.

   If the field computer is a PC, make sure that there is a network connection between the PC and the office computer.

   If the field computer is a Windows Mobile-based device, connect the device to the computer (for example using a USB cable or Bluetooth wireless technology).

Use either Microsoft ActiveSync technology or the Windows Mobile Device Center to manage the connection between the device and the computer. The software you use depends on the operating system the office computer is running.

When the device and the computer are connected, one of the following appears on the office computer:

- If the computer is running Windows Vista, the *Windows Mobile Device Center* window appears and displays the message Connected.

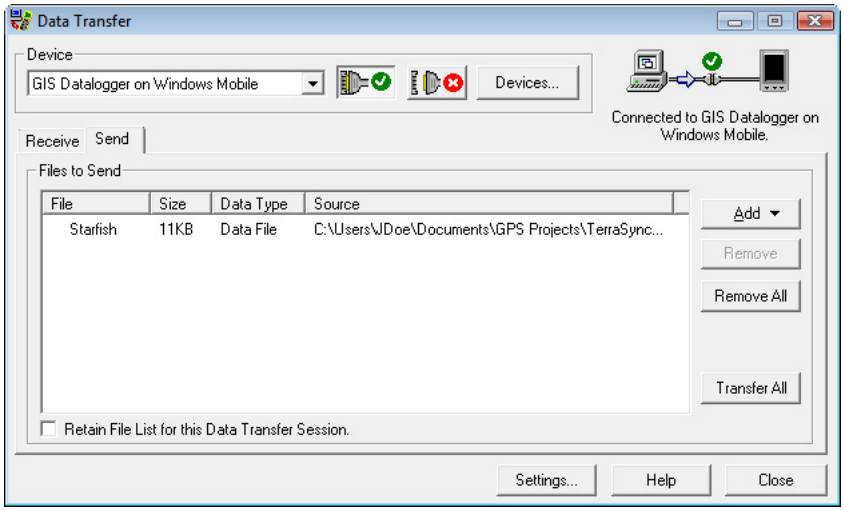
  For more information, refer to the *Windows Mobile Device Center Help*.

- If the computer is running Windows XP or 2000, the *Synchronization Setup Wizard* appears.

  For more information, refer to the *ActiveSync Help*.

2. In the GPS Pathfinder Office software, select *Data Transfer* from the *Utilities* menu. The *Data Transfer* dialog appears.
3. From the *Device* list, select the appropriate device (GIS Datalogger on Windows Mobile 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 Software 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. See:

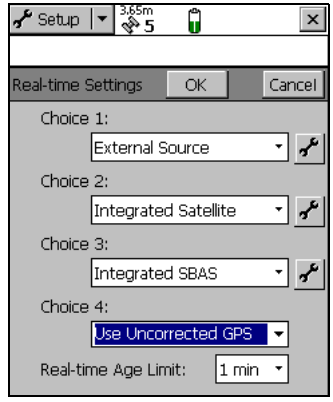
- Using real-time differential GPS (see below)
- Updating data, page 142

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. See:

- Sources of real-time differential corrections, page 140
- Logging postprocessable positions, page 141
- Checking the real-time status, page 141

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

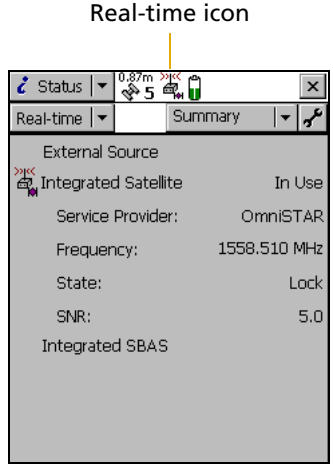
When you use a real-time differential correction source, there may be times when you cannot receive corrections. Any positions logged during these times are uncorrected, and are subject to errors which degrade their accuracy.

However, the TerraSync software always logs SuperCorrect™ data, except where logging carrier data (such as H-Star data) makes SuperCorrect logging unnecessary.

Logging SuperCorrect data means that 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.

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.

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 selecting features and navigating to them, and updating features. See:

- Opening an existing data file, page 143
- Filtering features, page 143
- Selecting a target in the Data section, page 144
- Navigating to a target in the Navigation section, page 145
- Updating a feature, page 146
- Selecting a target in the Map section, page 148
- Navigating to a target in the Map section, page 149
- Marking a feature as updated, page 149
- Closing the file, page 151

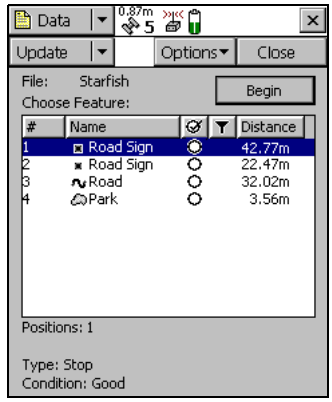
Opening an existing data file

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**.
5. The *Confirm Antenna Height* dialog appears. Click **OK**.

   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.

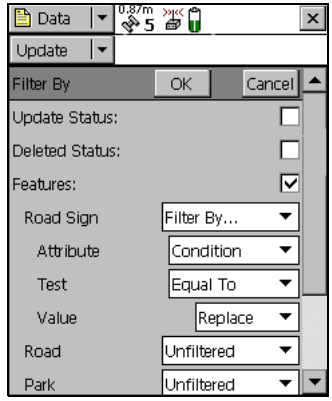
To make it easy to see which signs you need to visit, you will use filtering to group the features, then select the features you want to update from the filtered group.

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 select *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.

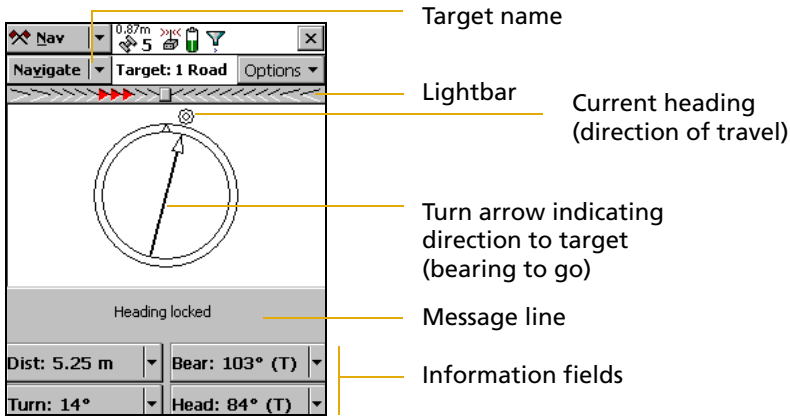
To navigate to a feature, select it as your target. Do this using the list of existing features.

To select a target:

1. In the *Update Features* screen, highlight the filtered road sign.
2. Tap **Options**.
3. Select *Set Nav Target* and from the pullout menu select *Point Position*. The target icon appears beside the selected feature. This icon replaces the icon usually used for the feature.

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 ✕ and the target is represented by the bull's-eye ◎.

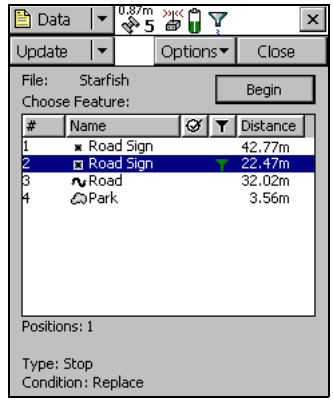
As you move closer to the target, the position symbol gets closer to the target symbol. You have reached the target when the position symbol is over the top of the target symbol.

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:



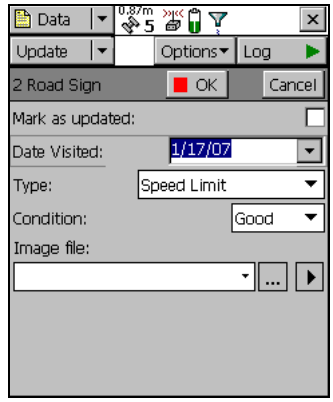
1. Tap the Section list button and select *Data*, then tap the Subsection list button and select *Update Features*.

   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 attributes or position of the feature, 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, refer to 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.

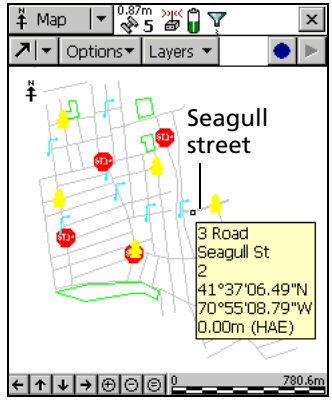
Note – *Your Map screen may appear different from the one shown.*

To select a target using the Map section:

1. Tap the Section list button and then 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.

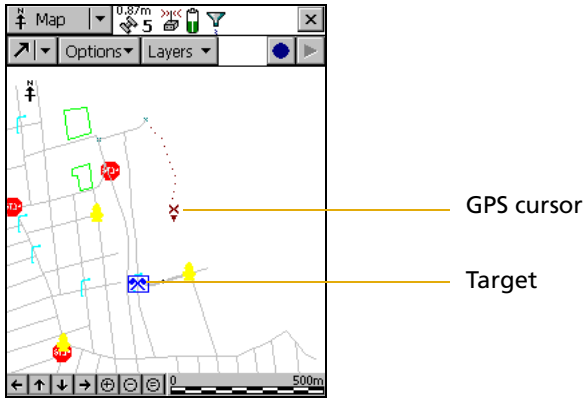
   When you select a feature, a tooltip appears. The tooltip shows the number, name, and position of the feature.



4. Tap **Options** and select *Set Nav Target* and from the pullout menu select *3Road - Start*. The target icon appears at the start point of the selected road.

Navigating to a target in the Map section

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



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

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

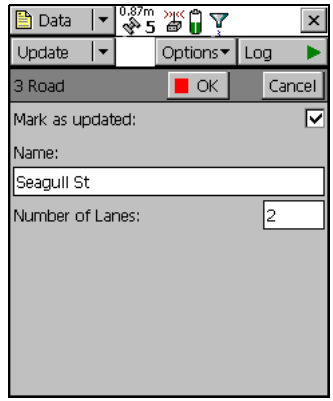
You may need to use zooming or panning to ensure that both the target and the GPS cursor are visible. When the target is not visible, the bearing arrow at the edge of the map shows its direction.

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 the attributes, offset, or GPS position of an existing feature, the status of the feature 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 status of the feature 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.

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**.

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