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4 Trimble GPScorrect Extension Getting Started Guide
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Trimble Navigation Limited / Trimble Europe B.V.

GPScorrect extension to Esri ArcPad software

End User License Agreement
Rev. 2010 October 4
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Introduction

In this chapter:

- What is the Trimble GPSCorrect extension?
- Using the Trimble GPSCorrect extension
- Related information
- Technical assistance
- Your comments

The Trimble GPSCorrect Extension Getting Started Guide describes how to use the Trimble® GPSCorrect™ extension for the Esri ArcPad software.

Even if you have used other Global Navigation Satellite System (GNSS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product.

This guide assumes that you know how to use the Windows Mobile® operating system that you are using.
What is the Trimble GPScorrect extension?

The Trimble GPScorrect extension for the Esri ArcPad software provides enhanced GNSS data collection and control of real-time differential correction sources. The extension communicates with a Trimble Mapping & GIS receiver connected to a field computer, allowing you to:

- set GNSS parameters in the receiver
- collect postprocessable GNSS positions for features that you create in ArcPad

You can use the GPScorrect extension to receive differential corrections in real time from a variety of sources, including an external radio, or an external beacon receiver such as the GeoBeacon™ receiver. You can also connect to a cellular phone and receive corrections from an external source that delivers corrections over the Internet, such as a VRS™ network. Depending on your GNSS receiver, the GPScorrect extension also enables you to use real-time differential corrections received from the receiver’s integrated beacon, satellite, or Satellite-Based Augmentation System (SBAS) receiver.

When you have collected GNSS position data with the GPScorrect extension, you can use Trimble postprocessing software (the Trimble GPS Analyst™ extension for the Esri ArcGIS Desktop software or the GPS Pathfinder® Office software) to differentially correct the GNSS data and to apply those corrections to the AXF file or the Shapefiles collected in ArcPad.

Typical workflows

Figure 1.1 on page 12 and Figure 1.2 on page 14 show two typical workflows when using the GPScorrect extension. The workflows are slightly different, and depend on whether you are primarily working with AXF files or with Shapefiles.

You will be working with an AXF file if you check out data from ArcMap to ArcPad software version 10.

Note – To use an AXF file you must use either AXF Get data for ArcPad button 🕒 from the GPS Analyst toolbar or the Get data for ArcPad button 🕒 from the ArcPad Data Manager toolbar.

You will be working with Shapefiles if you do one of the following:

- create a new layer in ArcPad software version 10.
- use the Get data for ArcPad button 🕒 from the GPS Analyst toolbar or the Get data for ArcPad button 🕒 from the ArcPad toolbar.
- copy out data rather than check out data. You are not able to check in Shapefiles that have been copied out.
Working with AXF files and the Trimble GPScorrect extension

When you check out data from the ArcMap software to use with ArcPad software version 10, the data is checked out as an AXF file. All feature type information is contained in the AXF file. When you add features to an existing layer, the GPScorrect extension automatically creates an SSF (.ssf) file with the same name as the AXF file. If you are using a map file, the SSF file will be named GPScorrect.SSF.

Tip – To log GNSS data in an SSF file with the same name as the AXF file, you must open a new empty map in ArcPad, select Add Layer and then select the AXF file.

Note – If you create a new layer in ArcPad software version 10, the new data file is a Shapefile. For more information, see Working with Shapefiles and the Trimble GPScorrect extension, page 13.

Note – If you copy out data rather than check out data, the layers will be in the Shapefile format. You are not able to check in Shapefiles that have been copied out.

All GNSS position information for all feature types is stored in the SSF file. To merge the GNSS position data from the SSF file with feature data from the ArcPad AXF file, you need version 4.00 or later of the GPS Pathfinder Office software, or version 2.10 or later of the Trimble GPS Analyst extension for Esri ArcGIS Desktop software.

Note – You must also have installed all relevant software updates for the office processing software to enable correct processing of the SSF file.
Figure 1.1  Typical workflows: Working with AXF files and the Trimble GPScorrect extension
**Working with Shapefiles and the Trimble GPSCorrect extension**

You will be working with Shapefiles if you create a new layer in ArcPad software version 10. You can also choose to work with Shapefiles in ArcPad software version 10 by using the Get data for ArcPad button on the GPS Analyst toolbar or the Get data for ArcPad button on the ArcPad toolbar.

**Note** – If you add features to a layer that you checked out to ArcPad software version 10, the data is added to the AXF file, not to a Shapefile. For more information, see Working with AXF files and the Trimble GPSCorrect extension, page 11.

**Note** – If you copy out data rather than check out data, the layers will be in the Shapefile format. You are not able to check in Shapefiles that have been copied out.

Each feature type has its own Shapefile. When you create a layer or add features to an existing layer, the GPSCorrect extension automatically creates an SSF file called GPSCorrect.ssf. All GNSS position information for all feature types is stored in the SSF file. To merge the GNSS position data from the SSF file with feature data from the ArcPad Shapefiles, you need version 3.10 or later of the GPS Pathfinder Office software, or version 1.20 or later of the Trimble GPS Analyst extension for Esri ArcGIS Desktop software.

**Note** – You must also have installed all relevant software updates for the office processing software to enable correct processing of the SSF file.
14 Typical workflows: Working with Shapefiles and the Trimble GPScorrect extension

**ArcPad and GPScorrect**
Collect feature and attribute data while the GPScorrect extension logs GNSS data to an SSF file.

**ActiveSync or Windows Mobile Device Center**
Copy the Shapefiles and the SSF file to your office computer.

**ArcGIS and GPS Analyst**
Use the Trimble GPS Analyst extension to import or check the Shapefiles into feature classes in an ArcGIS geodatabase, creating linked GNSS sessions from the SSF file. Use the Check in ArcPad Shapefiles and GPScorrect SSF button on the GPS Analyst toolbar.

Use the Differential Correction wizard in the GPS Analyst extension to generate corrected GNSS sessions and rebuild the linked ArcGIS features using the corrected positions.

**GPS Pathfinder Office**
Use the Differential Correction wizard to differentially correct the SSF file.

Use the ShapeCorrect utility to update the Shapefiles with the corrected GNSS positions.

Check in the updated Shapefiles into your GIS.

**GPS Analyst workflow**

**GPS Pathfinder Office workflow**
Using the Trimble GPSCorrect extension

The Trimble GPSCorrect extension runs automatically in the background when you start ArcPad, and controls communication between the ArcPad software and the GNSS receiver.

Whenever the GPSCorrect extension user interface (UI) is open, one of the 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 forms or screens. To switch to a different section, tap the Section list button and then select a section from the drop-down list. To close the GPSCorrect UI and return to ArcPad, tap in the Status bar.

The GPSCorrect extension continues to communicate with the GNSS receiver, using any settings you have configured in the UI.

The sections in the Trimble GPSCorrect extension enable you to:

- View summary or detailed information about the GNSS receiver, configured real-time sources, and the location and health of the satellites your receiver is tracking. For more information, see:
  - Skyplot section, page 66
  - Satellite Information section, page 71
  - Receiver section, page 72
  - Real-time section, page 74

Within these sections you can change GNSS settings or access GNSS and real-time settings in the Setup section. See GNSS settings area, page 70.

- View an animated skyplot and graph of DOP values over the next few hours, so that you can plan your data collection session around the times when satellite geometry is at its best. For more information, see Plan section, page 80.

- Display the current UTC time. See UTC Time section, page 83.

- Control how the GPSCorrect extension interacts with the GNSS receiver and any real-time differential correction sources, and define logging settings for postprocessing the data files that you collect in the ArcPad software. For more information, see Setup section, page 83.

- View copyright, licensing, and version information. See About section, page 94.
Related information

Release Notes

The Trimble GPSCorrect Extension 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 as a PDF file on the Trimble website, http://www.trimble.com/gpscorrect_ts.asp, under Documentation.

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 Trimble GPSCorrect extension technical support page (www.trimble.com/gpscorrect_ts.asp) for the latest support information about the software, including:

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

Windows error reporting

If for any reason a Windows Error Reporting dialog appears, indicating that the Trimble GPSCorrect extension 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 Trimble GPSCorrect extension.

Your comments

Your feedback about the documentation helps Trimble to improve it with each revision. Email your comments to ReaderFeedback@trimble.com.
Software Installation and Activation

In this chapter:

- System requirements
- Registering the Trimble GPCorrect extension
- Installing the Trimble GPCorrect extension
- Activating the GPCorrect extension
- Installing a translation of the Trimble GPCorrect extension
- Updating the Trimble GPCorrect extension
- Compatible GNSS receivers

This chapter describes how to install and activate version 3.20 of the Trimble GPCorrect extension on a GeoExplorer 6000 series handheld.

To install and run the Trimble GPCorrect extension, you must:

1. Make sure your field or office computer meets the minimum platform requirements for successful operation of the Trimble GPCorrect extension.

2. Register the Proof-of-Purchase Number (POPN) that you obtained when you purchased the Trimble GPCorrect extension, to obtain an installation code.

3. Install the extension using the installation code that you obtained when you registered the extension.

4. Activate the GPCorrect extension.
System requirements

Field computer specifications

Version 3.20 of the Trimble GPScorrect extension will install and run only on a GeoExplorer 6000 series handheld.

Required software

ArcPad software

Version 3.20 of the Trimble GPScorrect extension can be used only with Esri ArcPad software version 10.

Microsoft connection management software

To install the Trimble GPScorrect extension onto a Windows Mobile powered device and to transfer files between an office computer and a Windows Mobile powered device, you must have the appropriate Microsoft software installed on your office computer 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® 7 or Windows Vista®, make sure you have downloaded and installed the Windows Mobile Device Center.
- Windows XP, 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 25.
Registering the Trimble GPScorrect extension

Before you can install the Trimble GPScorrect extension, you must register the POPN that you obtained when you purchased the extension. You will receive an installation code that you enter during the installation process.

You can only register your POPN for the Trimble GPScorrect extension once. For information about obtaining your installation code when the extension has previously been registered, see Obtaining your installation code after registration, page 23.

Trimble recommends that you register before beginning installation.

To register, you need:

- the Proof-of-Purchase Number (POPN) from the POPN certificate that you received by email or from your Trimble reseller when you purchased the GPScorrect extension
- Internet access (including a valid email address)

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

To register your your POPN for the Trimble GPScorrect extension:

1. Go to the My Trimble account login page.

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

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

   ![My Trimble account login page](image)

2. If you already have an account, skip this step and go to step 3 to login.

   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 email 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 Trimble GPScorrect extension, 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).

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 POPN and install the extension. For more information, see Obtaining your installation code after registration, page 23.*

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 extension you have just registered now appears in the My Products section:

11. If the five lines below the Trimble GPScorrect extension do not appear, click the + beside the line for the Trimble GPScorrect extension that you have just registered.

   The Installation Code field shows the installation code for the Trimble GPScorrect extension. Make a note of this code. You must enter this code when you install or reinstall the extension.

   **Note** – If you are entitled to an upgrade from a previous version of the Trimble GPScorrect software, you can install Trimble GPScorrect version 3.20 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 Trimble GPScorrect extension, 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 extension 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 extension ask them for the installation code.
  If you cannot find out who registered the extension, contact your local Trimble reseller.

- If you registered the extension yourself, you can check your installation code from the *My Trimble* page of the Trimble website.
  To do this:
     Your default Web browser opens and displays the *My Trimble* account login page:
     ![My Trimble login page](image)
     b. Enter your email address and password and then click **Login**.
The *My Trimble* page for your account appears.

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

![My Products Section](image)

**Installation code**

Installation code


d. If the five lines below the Trimble GPScorrect extension do not appear, click the + beside the line for the Trimble GPScorrect extension that you have just registered.

The *Installation Code* field shows the installation code for the Trimble GPScorrect extension. Make a note of this code. You must enter this code when you install or reinstall the extension.
Installing the Trimble GPScorrect extension

This section describes how to install the Trimble GPScorrect extension. It provides information about the following options:

- Installing the Trimble GPScorrect extension on a Windows Mobile powered device, page 25
- Activating the GPScorrect extension, page 31
- Installing a translation of the Trimble GPScorrect extension, page 37

Installing the Trimble GPScorrect extension on a Windows Mobile powered device

This section describes how to install the Trimble GPScorrect extension on a supported Windows Mobile powered device.

*Note* – *The GPScorrect extension version 3.20 will only install and run on a GeoExplorer 6000 series handheld.*

The installation procedure comprises the following steps:

1. Install Microsoft connection management software onto the office computer.
2. Connect the Windows Mobile powered device and the computer.
3. Back up any Trimble GPScorrect extension data files.
4. Uninstall any previously installed versions of the Trimble GPScorrect extension.
5. Uninstall any previously installed versions of the Esri ArcPad software.
6. Install Esri ArcPad software version 10, and any required patches and other components.
7. Check that you have enough space on the device to install the Trimble GPSCorrect extension version 3.20.
8. Install the Trimble GPSCorrect extension version 3.20.

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 powered device, you must connect the device to the office computer. If the computer is running:

- the Windows Vista or Windows 7 operating system, use the Windows Mobile Device Center to manage the connection.
- the Windows XP operating system, 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 office computer.

To install software onto a Windows Mobile powered 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 www.microsoft.com/windowsmobile/devicecenter.mspx.

Installing ActiveSync technology

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

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 powered 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:
   • the Windows Vista or Windows 7 operating system:
     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 29 and Step 4, page 29).
        
        For more information, refer to the *Windows Mobile Device Center Help*. 
the Windows XP operating system:

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, page 29 and Step 4, page 29).

For more information, refer to the *ActiveSync Help*. 
Step 3: Back up any Trimble GPScorrect extension data files

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

<table>
<thead>
<tr>
<th>To transfer files using...</th>
<th>do the following...</th>
</tr>
</thead>
<tbody>
<tr>
<td>the Windows Mobile Device Center</td>
<td>click File Management and use the Windows Explorer-type window to copy files.</td>
</tr>
<tr>
<td>ActiveSync technology</td>
<td>click Explore and use the Windows Explorer-type window to copy files.</td>
</tr>
</tbody>
</table>

Step 4: Uninstall any previous versions of Trimble GPScorrect extension

Before installing new versions of the Trimble GPScorrect extension, Trimble recommends that you uninstall any previously installed versions of the Trimble GPScorrect extension from the Windows Mobile powered device and the office computer.

To remove the Trimble GPScorrect extension from either location, use the Add or Remove Programs tool in the Control panel.

Step 5: Uninstall any previously installed versions of the Esri ArcPad software

Before installing new versions of the Esri ArcPad software, Trimble recommends that you uninstall any previously installed versions of the ArcPad software from the Windows Mobile powered device and the office computer.

Step 6: Install Esri ArcPad software version 10

You must install the Esri ArcPad software before installing the Trimble GPScorrect extension. For detailed installation instructions, refer to the ArcPad documentation.

Step 7: Check that you have enough space on the device

Before you install the Trimble GPScorrect extension, make sure that you have enough free space on the device. The Trimble GPScorrect extension requires at least 3 MB of free space.

Note – The installation program cannot determine how much memory is available in the non-volatile storage location. You must ensure that there is 3 MB 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 Trimble GPScorrect extension. If this happens, make more space available in the secondary storage location, then install the software again.

**Step 8: Install the Trimble GPScorrect extension on the device**

1. Before you begin, make sure that:
   - you have registered your POPN for the extension and have made a note of the installation code that you must enter during installation. For more information, see Registering the Trimble GPScorrect extension, page 19.
   - you have closed all applications on the device.

2. Go to www.trimble.com/gpscorrect_ts.asp. Click Downloads and then click the required version of the software.
   The InstallShield Wizard launches.

3. On the Welcome screen, click Next.

4. You are prompted to check that the Esri ArcPad software is not running on the device. If required, close ArcPad. Click Next.

5. Read the software license agreement, select I accept the terms of the license agreement and then click Yes to accept it.
   The Register your Software page appears.

6. Do one of the following:
   - If you have registered the extension and obtained your installation code for the extension, select the I have already registered, and have a valid installation code option and then click Next.
   - If you have not yet registered the extension and do not have an installation code for the extension, select the I do not have an installation code. I want to register the Proof-of-Purchase Number (POPN) from my POPN certificate over the Internet now option and then click Next.
   The Register page opens in your default Web browser, displaying the My Trimble account login page. For more information, see Registering the Trimble GPScorrect extension, page 19.

7. Enter the installation code that you received when you registered the POPN for the Trimble GPScorrect extension and then click Next.

8. The Start Copying Files page appears. Click Next.

9. If the message Install “Trimble GPScorrect” using the default application install directory? appears, click Yes to install the software to the default location.
**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.*

10. If you clicked *No* in Step 11, the *Select Destination Media* dialog appears. Click *OK* to proceed with the installation.

11. The message *Please check your mobile device screen to see if any additional steps are necessary to complete this installation* appears. Check your mobile device screen to see if any additional steps are necessary to complete the installation, and then click *Ok*.

12. On the *InstallShield Wizard Complete* screen, click *Finish*.

**Activating the GPScorrect extension**

You must activate the GPScorrect extension version 3.20 once it is installed on a field computer powered by the Windows Mobile 6.5 operating system.

To do this:

1. If not already started by the installation process, start the Activation Wizard. Click *Start / All Programs / Trimble / GPScorrect 3.20 WM / Trimble GPScorrect Activator*. The Activation Wizard was installed on your office computer during the software installation.

   *Note* – *The Activation Wizard is a .NET framework application. If your office computer is running the Windows XP or Windows Vista operating system, you must also have the latest Service Packs installed.*

2. Select your preferred language:

   ![Language Selection](image)

   The Activation Wizard connects to the field computer through Microsoft ActiveSync technology or the Windows Mobile Device Center.
3. Select an activation method:

![Select an Activation Method](image)

<table>
<thead>
<tr>
<th>Select this method</th>
<th>If...</th>
<th>See...</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wish to activate the Trimble GPS correct extension over the Internet</td>
<td>Your office computer is connected to the Internet. Trimble recommends this method.</td>
<td>page 33</td>
</tr>
<tr>
<td>I already have a Trimble GPS correct extension Activation Key for this device</td>
<td>If your Trimble Reseller has provided you with an Activation Key, or you have previously activated this Installation Code on the same field computer and kept a record of the Activation Key.</td>
<td>page 34</td>
</tr>
<tr>
<td>I do not have an Internet connection</td>
<td>You do not have an Internet connection.</td>
<td>page 35</td>
</tr>
</tbody>
</table>
Product information

The Wizard will now extract information about the connected device that will help you identify it at a later stage.

You will be able to edit the Device Name to customize it to your environment. Depending on the connected device type, you may also be required to enter the device serial number.

Online activation

The Wizard communicates directly with the Trimble Activation server and activates the GPScorrect extension on your field computer:
Activation using an existing Activation Key

The Activation Wizard prompts you for the folder where the Activation Key is stored. This could be on a local or network drive, or an external memory card, such as a USB memory stick or SD card.

Use the Browse button to navigate to the required folder.

If the Activation Wizard cannot find an Activation Key for the connected device in the selected folder, it will continue to prompt for a different folder.

Activation succeeds only if the Activation Key matches the connected field computer:
Offline activation

1. Print out or write down the information that appears:

2. Send the information to your Trimble reseller.

Your Trimble reseller will return the Activation Key on an electronic media (diskette, CD, SD card, or USB memory stick).

3. Insert the media into the office computer that is connected to the field computer.

Activation continues as for Activation using an existing Activation Key.
Activation troubleshooting

One of the following issues may occur:

• No valid Installation Code:

![Activation Wizard](image1)

No valid Installation Code: 860B25-6110-66239-69A0-65E3

Please enter another Installation Code: 

![Activation Wizard](image2)

In these circumstances, enter a valid or previously unused Installation Code. If in doubt, contact your Trimble reseller.

• The Installation Code is assigned to another device:

![Activation Wizard](image1)

The following Installation Code is already in use:

923494.01119334.38844.4

It is currently associated with

Device Name: June S E Hendrick
Device Serial Number: 123456789

Please enter another Installation Code:

![Activation Wizard](image2)
Starting the GPScorrect extension

The GPScorrect extension version 3.20 will run on a field computer only if it is successfully activated. If a valid Activation Key is not found, the following error message appears:

Tap OK to exit and then run the Activation Wizard to activate the software, see page 31.

Installing a translation of the Trimble GPScorrect extension

Trimble recommends that you install a translation of the Trimble GPScorrect extension only on a field computer that has the corresponding language version of the operating system installed. For example, install the Japanese Trimble GPScorrect extension 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 / Done** 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 Trimble GPScorrect extension 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.

The Trimble GPScorrect extension is available in several languages. To install a translation of the GPScorrect extension, go to the Downloads section on the GPScorrect extension support page (http://www.trimble.com/gpscorrect_ts.asp).
**Updating the Trimble GPScorrect extension**


**Compatible GNSS receivers**

The GPScorrect extension version 3.20 will install and run only on a GeoExplorer 6000 series handheld.

**Connecting to a GNSS receiver**

To use GNSS positions from the integrated GNSS receiver when the Trimble GPScorrect extension is installed on a GeoExplorer 6000 series handheld, configure the extension to connect to GNSS on COM3.
Collecting and Processing Data

In this chapter:

- Preparing for data collection
- Setting up a real-time differential correction source
- Data collection
- Postprocessing the data

This chapter provides step-by-step instructions for key tasks when preparing for data collection, collecting data, and processing data collected using the GPScorrect extension.

Note – For detailed information on other tasks, refer to the documentation for the product used to perform the task.
Preparing for data collection

Before you collect any data, configure the Esri ArcPad software to use the GPSCorrect protocol. Then use the Trimble GPSCorrect extension to configure GNSS settings, select real-time correction sources if required, and enable GNSS logging to SSF.

ArcPad settings

To connect to a Trimble GNSS receiver, you must specify the correct communications protocol and settings in ArcPad:

1. On the taskbar, tap \(\text{ArcPad 10} \) icon.
2. On the main toolbar, tap the arrow beside the GPS Position Window button and then select GPS Preferences.

The GPS Preferences dialog appears.

3. Select the GPS tab.
4. From the Protocol drop-down list, select Trimble GPSCorrect.
5. In the Port field, select the port that your GNSS receiver is connected to.
6. If you want the GPSCorrect extension to connect to the GNSS receiver whenever ArcPad starts, select the Automatically Activate check box.
7. Tap the GPS Height tab and then set the Antenna Height field to the height of the antenna that is connected to the GNSS receiver. The GPSCorrect extension uses the value specified in this field.

Note – To specify the antenna type and measurement location, use the Antenna Settings form in GPSCorrect.

8. Tap OK.

Note – To use the GPSCorrect extension with ArcPad, only the settings detailed above are essential. However, other settings in this dialog either affect the way that the GPSCorrect extension operates, or are overridden by settings in the GPSCorrect extension. See Forms and Controls, page 63.
**Trimble GPSCorrect extension settings**

The Trimble GPSCorrect extension lets you configure:

- GNSS quality control settings
- real-time differential correction sources
- the type of GNSS data you want to collect

**Configuring GNSS settings and accuracy display settings**

Use the Setup section in the Trimble GPSCorrect extension to configure GNSS and real-time correction source settings:

1. In ArcPad, tap the arrow beside the GPS Position Window button and then select **GPS tools > Trimble GPSCorrect**, or tap the GPSCorrect button . The Skyplot section of the GPSCorrect extension appears.

2. To configure GNSS settings, do one of the following:
   - Use Smart Settings. Using Smart Settings, the GNSS receiver generates the best possible position for any given environment, without the need for you to adjust receiver settings to match the conditions. Smart Settings increase the precision of your data, and minimize the effect of atmospheric interference and poor satellite geometry.

   To select Smart Settings, tap the Setup button in the Skyplot section, or tap the arrow on the Section button next to the status bar and from the drop-down list select **Setup** to open the Setup section. Then tap the **GNSS Settings** button and configure your settings. For more information, see **GNSS Settings form, page 86**.

   When the Smart Settings option is selected, all other fields in the form are hidden.

   **Note** – Trimble recommends that you use accuracy-based logging (**Accuracy Settings form, page 88**) and Smart Settings to control the quality of the GNSS positions logged and let the GPSCorrect extension manage the logging of positions based on your required accuracy.

   - Specify custom GNSS settings, including configuring accuracy display settings, tap the Setup button in the Skyplot section, or tap the arrow on the Section button next to the status bar and from the drop-down list select **Setup** to open the Setup section. Then tap the **GNSS Settings** button and configure your settings. For more information, see **GNSS Settings form, page 86**.

3. To change how the estimated accuracy is displayed in the status bar, tap the Setup button below the **Accuracy Settings** field. The **Accuracy Settings** form appears.
a. In the Accuracy Value For Display/Logging fields, select the parameters that will be used to determine the estimated accuracy:
   - Select whether to use the horizontal or vertical accuracy of the current GNSS position.
   - Select In the field to use the current estimated accuracy (recommended if you are using a real-time correction source), or select Postprocessed to use the predicted accuracy that will be achieved after the field data has been postprocessed.

b. If you selected Postprocessed, select the estimated distance to the base station that will be used for postprocessing from the Postprocessing Base Distance field. If you will use more than one base station (during H-Star™ processing), specify the estimated distance to the closest base station. Also, specify if your base data is GPS only, or GPS and GLONASS.

c. Tap OK to return to the GNSS Settings form.

**Enabling SSF logging**

To enable logging of GNSS data to an SSF file:

1. Tap the Section list button and then select Setup.
2. Tap the Logging Settings button. The Logging Settings form appears.
3. From the Log GNSS to SSF field, select On.
4. The Antenna Height field displays the antenna height set in the GPS Preferences dialog in ArcPad. Tap the Setup button beside this field to open the Antenna Settings form, where you can configure the antenna type and measurement settings. To configure the antenna height, use the ArcPad GPS Preferences dialog.
5. Tap Done.
Setting up a real-time differential correction source

GNSS positioning can be made more accurate either through postprocessed differential correction after data collection, (see Postprocessing the Data, page 57) or directly in the field using real-time differential correction.

If your data files contain autonomous (uncorrected) positions as well as real-time corrected positions, Trimble recommends that you postprocess the data. During postprocessing, you can choose whether to correct only autonomous positions, or all positions. In general, recorrecting positions corrected in real-time will have little effect on the accuracy of your data.

Use the real-time status screens in the Status section to check the status of any configured real-time correction source.

Use the Real-time Settings form to select the real-time differential GNSS sources that you use, if any, and to configure how your system communicates with each source:

1. Open the Real-time Settings form. To do this, do one of the following:
   - In the Setup section, tap Real-time Settings.
   - In any screen in the Real-time section, tap the Setup button.

2. In the Choice 1 field, select the real-time correction source that you would prefer to receive real-time corrections from. Depending on the type of GNSS receiver you are using, the options are:
   - To record uncorrected GNSS positions only, without using any real-time corrections, select Use Uncorrected GNSS in the Choice 1 field. You can correct these positions using Trimble postprocessing software.

   3. If a Setup button appears next to the Choice 1 field, click the Setup button to open the relevant dialog and set up options for the selected real-time correction source. For more information, see:
      - External Source Settings form, page 90
      - Integrated SBAS Settings form, page 93

   Note – No Setup button appears for the Use Uncorrected GNSS and Wait for Real-time selections. There are no settings to configure for these selections.

4. If you want to configure a second source for real-time corrections if your first choice is not available, select the type of source in the Choice 2 field.

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Source</td>
<td>Use corrections from an external correction source (for example a radio or an external beacon receiver).</td>
</tr>
<tr>
<td>Integrated SBAS</td>
<td>Use corrections from a Satellite Based Augmentation System (SBAS) using the GNSS receiver’s integrated SBAS receiver.</td>
</tr>
<tr>
<td>Use Uncorrected GNSS</td>
<td>Log autonomous GNSS positions without applying real-time corrections.</td>
</tr>
<tr>
<td>Wait for Real-time</td>
<td>Suspend logging until a real-time correction source becomes available.</td>
</tr>
</tbody>
</table>
Note – The Choice 2, Choice 3, and Choice 4 fields only appear if there are further options to choose from. For example, if you choose Use Uncorrected GNSS in the Choice 1 field, there are no further valid choices, and the Choice 2, Choice 3, and Choice 4 fields do not appear.

5. Repeat steps 2 and 3 for all the choice fields that appear, or until you have selected all the real-time correction sources that you want to use. For information about valid combinations of real-time correction sources, see Table 3.1 on page 45.

6. If the Real-Time Age Limit field appears, select a maximum age at which a correction message will be used.

7. Click OK.

It is important that you set up all of the choices correctly, so that when the Trimble GPScorrect extension switches between choices it can continue to receive corrections.

The GPScorrect extension always uses the highest priority real-time source available, according to your list of preferences. If the source it is currently using becomes unavailable, the GPScorrect extension switches to the next choice. Whenever the Trimble GPScorrect extension acquires a higher priority real-time source, it switches back to this source. For example, the GPScorrect extension will not use your third choice if your first choice is available.

Valid combinations of real-time correction sources

The Choice fields let you select up to three options for real-time corrections. However, there are restrictions on the correction combinations you can select. For example, External Source can only ever be selected in the Choice 1 field. Also, the last (least preferred) choice you make must be either Use Uncorrected GNSS or Wait for Real-time. Once you select either of these options in a Choice field, there are no further logical choices you can make, so the subsequent Choice fields disappear.

You do not have to remember which combinations are valid: the Trimble GPScorrect extension manages this for you by hiding invalid options or Choice fields depending on your previous choices.

The software also ensures that you do not select choices that are not valid for the connected GNSS receiver. For example, if the connected receiver is a GeoExplorer 6000 series handheld, only the External Source, Integrated SBAS, and Use Uncorrected GNSS options are available in the Choice 1 field. If you then select Integrated SBAS in the Choice 1 field, the only options available in the Choice 2 field are Use Uncorrected GNSS and Wait for Real-time.

If you have configured an invalid real-time combination before connecting the GNSS receiver, a warning message appears when you connect to GNSS, telling you to check your real-time settings. When you open the Real-time Settings form, the only changes you can make to your real-time settings are those that are compatible with the connected receiver.
Table 3.1 summarizes the valid combinations of real-time correction sources.

Table 3.1  Real-time Settings form: Valid real-time correction choices

<table>
<thead>
<tr>
<th>Choice 1</th>
<th>Choice 2</th>
<th>Choice 3</th>
<th>Choice 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Source</td>
<td>Integrated Beacon</td>
<td>Integrated SBAS</td>
<td>Use Uncorrected GNSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wait for Real-time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use Uncorrected GNSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wait for Real-time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use Uncorrected GNSS</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wait for Real-time</td>
<td>–</td>
</tr>
<tr>
<td>Integrated SBAS</td>
<td>Use Uncorrected GNSS</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Wait for Real-time</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Use Uncorrected GNSS</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Using corrections from a VRS network

A virtual reference station network consists of GNSS hardware, software, and communication links. It uses data from a network of base stations to provide roving receivers with corrections that are more accurate than corrections from a single base station.

Figure 3.3  Parts of a VRS network
The server is a computer running VRS software such as the Trimble GPSNet™ software. The server uses the base station data to model systematic ephemeris, tropospheric, and ionospheric errors at the roving receiver's position. It then sends interpolated correction messages back to the roving receiver.

Depending on the VRS software, the server may also use the data from the base station network to simulate a base station (or virtual reference station) at the location of the roving receiver.

If no network corrections are available, the server may switch to raw mode. In raw mode the server simply relays the corrections from the single physical base station that is closest to the roving receiver.

Unlike other real-time correction sources, using corrections from a VRS network requires two-way communication between the server and the roving receiver. The roving receiver must send its position to the server, so that the server can calculate corrections for that position, and select the closest base station if necessary. Because the VRS network generates a unique virtual reference station for each roving receiver, the server must send separate corrections to each roving receiver.

There are currently two commercial server software products for a VRS network: GPSNet from Trimble, and GNNET from Geo++. Both software products can output RTCM messages in the Trimble VRS network message format.

You can connect the roving receiver to the VRS network using an Internet connection or a direct dial connection.

Because an Internet connection is more commonly used, the following section describes how to connect to a VRS network using an Internet connection.

For more information on configuring a direct dial connection, see External Source Settings form, page 90.

**Connecting to a VRS network using an Internet connection**

You can use an existing Internet connection on the field computer to connect to a single base station or a VRS network that is transmitting corrections over the Internet.

You can connect to the Internet in a number of ways, including using the optional integrated modem, Wi-Fi (an 802.11b connection), or a Bluetooth wireless connection to a Bluetooth-enabled cellular phone.

Once connected, open an application, for example, Internet Explorer, to test the connection. Some applications automatically launch the connection when you start the application, if a current connection is not already established.

**Note** – The GPScorrect extension does not control or configure the Internet connection. In the software, you only specify the IP address or URL of the VRS network, and the port on the server to connect to.
Connecting to a cellular network from the modem

If the GeoExplorer 6000 series handheld has an integrated cellular modem, use the modem to connect to a cellular network and access the Internet.

To connect to a cellular network using the modem:

1. Configure the connection to the network. This can be Automatic or Manual.
2. Connect to the cellular network.

Before you begin the steps below, Trimble recommends that you:

- make sure that a SIM card is inserted in the handheld.
- confirm that the modem can access the Internet directly. If necessary, contact your service provider and confirm whether you must enter a user name, password, and domain details when connecting.
- make sure that you have the correct APN (Access Point Name) from your cellular provider.

Step 1: Configure the connection

To set up an automatic configuration:

1. Tap / Settings / Connections / Wireless Manager. If the Phone is Off, tap Phone to turn it on.
2. Tap / Settings / Connections / Connections.
3. On the Connections screen, on the Tasks tab, tap Automatically configure connection.
   
   The device holds a database of the most common cellular providers and the correct connection settings. The handheld will attempt to identify the SIM vendor.

4. If the SIM vendor is recognised correctly, tap Next to continue. The connection settings are set up automatically. The process takes about 30 seconds.

   If the SIM is not automatically detected, or the vendor settings are not known you will need to set up the configuration manually.

To set up a manual configuration:

1. Tap / Settings / Connections / Wireless Manager. If the Phone is Off, tap Phone to turn it on.
2. Tap / Settings / Connections / Connections.
3. Under Tasks, tap Add a new modem connection.
4. Enter a name for the connection, for example My Connection.
5. In the Select a modem field, select Cellular Line (WWAN) and then tap Next.
6. Enter the APN provided by your cellular provider (check with your provider first for correct settings, some providers have multiple APN settings).
7. Tap **Next**.
8. Enter a username password and domain if required (check with your provider, these are often not required). If not required, leave these fields empty.
9. Tap **Finished**.

**Step 2: Connect to the cellular network:**

1. Tap / Settings / Connections / Wireless Manager. If the Phone is Off, tap Phone to turn it on.
2. Tap / Settings / Connections / Connections.
3. Under Tasks, tap **Manage existing connections**. The configured connections are listed.
4. Tap and hold the connection that you want to use. Tap **Connect** from the pop-up menu.

   The task bar shows the “connecting” icon, for example 📞. When the connection is open/established, the task bar shows the “connected” icon, for example 📞. The icons shown depend on the network. For more details, see the GeoExplorer 6000 Series User Guide.

**Connecting to a cellular network using the Bluetooth radio**

If the GeoExplorer 6000 series handheld does not have an integrated cellular modem, connect to the Internet using the Bluetooth radio to connect to a Bluetooth-enabled cellular phone and then connect to the Internet.

*Note – Some cellular phones support the Bluetooth PAN (Personal Area Networking) service as well as the Bluetooth DUN (Dialup Networking) service. Because DUN connections are more common, this section assumes you are making a dialup network connection with the Bluetooth-enabled phone.*

To connect to a Bluetooth-enabled phone using a Bluetooth DUN (Dialup Networking) connection, you must:

1. Connect the field computer to a Bluetooth-enabled phone and then configure the connection to the dialup network.
2. Connect to the Internet using the dialup network.

*Note – Before you begin the steps below, Trimble recommends that you confirm that the phone can access the Internet directly. If necessary, contact the cellular phone provider and confirm whether you must enter a user name, password, and domain details when connecting an external device to the phone using Bluetooth dialup networking.*
Step 1: Connecting the field computer to the phone and configuring the connection to the dialup network

1. Make sure that the field computer and the phone are within five meters of each other, and that the Bluetooth radio in each device is turned on.
2. On the field computer, tap \Settings/\Connections/\Connections.
3. Below Proxy Internet, tap Add a new modem connection.
4. Enter the name for the connection. For example, enter the name of the phone or the VRS network that you will connect to.
5. From the Select a Modem drop-down list, select Bluetooth and then tap Next.
6. If the phone you want to connect to is:
   - listed, go to Step 7 below.
   - not listed:
     a. Tap Add new device or New Partnership. The field computer searches for other Bluetooth devices and displays them in the list.
     b. From the list of available devices, select the phone you want to connect to and then tap Next on the right softkey.
     c. To pair with the phone, enter a passcode of your choice that you will easily remember onto the field computer and then tap Next on the right softkey.
     d. When prompted by the phone, enter the same password and then accept the connection.
     e. On the field computer, in the Partnership Settings screen, make sure that Dialup Networking (DUN) is selected and then tap Finish on the right softkey.

You have now created a partnership between the field computer and the phone so that they can communicate.

7. From the My Connections list, select the phone that you want to configure the connection to and then if required tap Next on the right softkey.
8. Enter the GPRS access number for the Internet.

Two of the common GPRS access numbers for cellular phones on GSM networks are *99***1# and *99#. If these access numbers do not work, contact the cellular phone provider to obtain the appropriate number to use.

Note – You do not need to set up dialling rules or change the Internet connection settings on the phone. The connection settings you enter on the field computer are passed to the phone to use for this connection.
9. Tap **Next**.

10. Unless the phone provider confirmed that you must enter user name, password, and domain settings to access the Internet, tap **Finish** without entering any information in this screen.

   Otherwise:
   a. Enter the required information.
   b. If the phone provider has told you that you need to change the baud rate or other settings for the connection, tap **Advanced**, configure these settings and then tap **OK**.
   c. Tap **Finish**.

   You are returned to the *Connections* screen.

   You have now configured the dialup networking connection.

**Step 2: Connecting to the Internet using the dialup network**

1. On the field computer, go to the *Connections* screen, if it is not already open (tap / Settings / Connections / Connections).

2. Below *Proxy Internet*, tap **Manage existing connections**.

3. Tap and hold the connection you want to use and then select **Connect**.

4. Unless the phone provider confirmed that you must enter user name, password, and domain settings to access the Internet, tap **OK** without entering any information in this screen. Otherwise, enter the required information and then tap **OK**.

5. If the phone prompts you for confirmation to connect to the Internet, accept the connection.

   The phone dials the configured GPRS access number and then connects to the Internet.

   A Connectivity notification appears on the field computer as the connection is being made.

   After the connection is made you are returned to the *My ISP* screen.

   To check the connection status at any time, tap the title bar and then tap the required connectivity icon on the pull-down list. To end the connection at any time, tap *Wireless Manager* and then tap the required connection to turn it off.

6. Tap **OK** to close the *Proxy Internet* screen.

7. Tap **x** to close the *Connections* screen.

8. Tap **x** to close the *Settings* screen.
Configuring the GPScorrect extension to use real-time corrections from the Internet source

1. On the field computer, start the Trimble GPScorrect extension and then open the Setup section.
2. Tap **Real-time Settings**. The **Real-time Settings** form appears.
3. From the **Choice 1** field, select **External Source**.
4. Configure the external source:
   a. Tap the Setup button beside the **Choice 1** field. The **External Source Settings** form appears.
   b. From the **Type** field, select:
      - **VRS** if the real-time correction source is a VRS network.
      - **Single Base** if the real-time correction source is a single base station that broadcasts its corrections over the Internet.
   c. From the **Connection Method** field, select **Internet**.
   d. In the **Address** field, enter the IP address or URL of the VRS network or the server that is supplying the corrections from the VRS network.
      
      Typically, the IP address or URL of a VRS network has the format 10.3.123.456:1234, where the digits before the colon (:) are the address, and the digits after the colon (:) are the port number.
   e. In the **Port** field, enter the port number that you will use to connect to the server.
   f. If you are connecting to a VRS network through an NTRIP server, tap the Setup button beside the **Source** field. The GPScorrect extension attempts to establish a connection to the NTRIP server. If the connection is successful, the **Select Server** form appears. Select the server that you want to use and then tap **OK** to return to the **External Source Settings** form.
   g. If you selected a VRS network that requires authentication, the **Name** and **Password** fields appear. Enter the user name and password that you obtained from the service provider.
   h. From the **Connection Control** field, select:
      - **Auto** if you want the GPScorrect extension to automatically establish and end connections to the VRS network as necessary.
      - **Manual** if you want to connect or disconnect only when you tap **Ext Source** in the **Setup** screen.
Collecting and Processing Data

3. Tap **OK** to confirm the settings and return to the *Real-time Settings* form.

5. Tap **Done** to confirm the real-time settings and return to the main screen of the Setup section.

If you selected **Auto** in the *Connection Control* field, the **Ext Source** button is depressed and the software attempts to connect to the server.

6. If you selected **Manual** in the *Connection Control* field, tap the **Ext Source** button that appears below the Status bar in the Setup section to connect the GPScorrect extension to the Internet correction source.

**Tip** – To disconnect or reconnect to the server at any time, tap **Ext Source**. To view the status of the real-time correction source, open the Status section, select the Real-time subsection and then select **External** from the **Summary** list button.

**Reconnecting to the Internet**

To reconnect to the Internet at any time after setting up the connection, repeat steps 3 through 8 on page 50.

If you selected Auto in the *Connection Control* field of the GPScorrect extension, the extension automatically connects to the Internet source that is providing real-time differential corrections.

To **manually** reconnect the GPScorrect extension to the Internet source that is providing real-time differential corrections, open the software and then tap the **Ext Source** button that appears below the status bar in the Setup section.

**Data collection**

Once you are in the field, use the Trimble GPScorrect extension to check GNSS and real-time correction status. Use the Plan section in the GPScorrect extension to plan your data collection session around the times of best satellite geometry, and to check when you may need to adjust your GNSS settings to obtain more GNSS positions. Then use ArcPad to collect data as usual.
Checking the GNSS status

When you activate GNSS in ArcPad, the Trimble GPScorrect extension connects to the GNSS receiver, and begins to track visible satellites and to calculate its current position.

You can configure ArcPad to activate GNSS automatically whenever it runs. See ArcPad settings, page 40.

To activate GNSS manually, tap the arrow beside the GPS Position Window button and then select GPS Active.

Move to a location where you have a clear view of the sky, and then use the satellite icon on the status bar to check whether the receiver is computing GNSS positions.

**Note** – The number beside the icon indicates how many satellites are being used to compute GNSS positions. If the satellite geometry is too poor to compute positions, the icon flashes. You need at least four satellites to compute GNSS positions.

The Skyplot section appears when you first run the GPScorrect extension. Use the skyplot to check the satellites that are being tracked and the GNSS solution quality, and to view your current position. See Skyplot section, page 66.

If you are using real-time differential corrections, use the Real-time section to check that you are receiving corrections from the selected source. See Real-time section, page 74.

Planning the data collection session

The Plan section in the Trimble GPScorrect extension includes an animated skyplot of projected GNSS satellite positions over the next twelve hours. The Plan section also shows a graph of DOP values over that period, using the current GNSS settings.

Once you have reached the location where you will be collecting data, open the Plan section and check the DOP graph at the bottom of the screen. High DOP values appear in green, and values that exceed the currently configured maximum value (the horizontal line) appear in red.

Use the Play button to “play” (preview) the session, or move the slider control on the timeline to check GNSS conditions at a particular time. For more information, see Plan section, page 80.

If necessary, use the GNSS settings area (see page 70) in the Skyplot section or the Satellite Information section to adjust the GNSS settings. Then return to the Plan section to see the effect of the changes.
Collecting data

In general, collecting data with the Trimble GPSCorrect extension is exactly like collecting data with ArcPad alone. When you have enabled GNSS logging in the GPSCorrect extension, GNSS data is logged to an SSF file. Simply create or edit layers and features in ArcPad as usual.

If the map document has been saved, the SSF file is stored, by default, in the same folder as the current ArcPad map (.apm) document. If the map document has not yet been saved, the SSF file is stored in the same location as the AXF file or the first edited Shapefile.

To log GNSS data to an SSF file with the same name as the AXF file, open a new empty map in ArcPad, select Add Layer and then select the AXF file. If you use map files, Shapefiles, or a combination of Shape and AXF files, you will be logging to a GPSCorrect.SSF file.
**Estimated Accuracy icon**

As you log features, the GPScorrect status bar displays a value in the Estimated Accuracy icon that provides information about the accuracy of the current GNSS position. This same value is also displayed in the status bar in the ArcPad software. The information shown by the Estimated Accuracy icon depends on the parameters configured in the Accuracy Settings form (see page 41).

The estimated accuracy value may be:

- the horizontal or the vertical accuracy of the current GNSS position
- the estimated accuracy in the field or the predicted accuracy after postprocessing the current GNSS position

*Note – The value shown depends on several factors, including satellite geometry and the type of GNSS receiver that is connected.*

To show the predicted postprocessed accuracy, there must be a data file open and the software must be logging GNSS positions. The predicted postprocessed accuracy is a prediction of the accuracy that will be achieved after postprocessing. When logging H-Star or carrier data, the predicted postprocessed accuracy value applies to all the positions collected since you achieved lock on the required minimum number of satellites. For all other receivers, this value applies only to the current position. The predicted postprocessed accuracy has a 68% confidence level, which means that 68% of the time the postprocessed position will be within the predicted postprocessed accuracy value shown when the position was collected.

The direction of the arrow indicates whether the estimated accuracy shown is for the horizontal or the vertical accuracy of the current feature.

An arrow with no estimated accuracy value indicates that the software is unable to calculate the estimated accuracy. Tap the icon for more information.

*Note – Regardless of the accuracy indicator parameters set in the Accuracy Settings form, the EPE field in the GNSS Position window in ArcPad always shows the horizontal, in-the-field estimated accuracy.*

Use the Estimated Accuracy icon to help ensure that the features collected will meet your accuracy requirements, either in the field or after postprocessing. When the value shown on the icon reaches the accuracy required for the feature, you can stop logging.

**Collecting offsets and traverses using reference points**

Reference points are used to collect radial traverses, point feature offsets, and offsets for vertices in lines and polygons.

*Note – To ensure that vertices and features created from reference points can be differentially corrected, log a new GNSS reference point every time you start a new offset or radial traverse.*
To log reference points:

1. Move to the location where you want to log a reference point.
2. From the offset drop-down list, select the Offset Point option or the Radial Traverse option.
3. Use a laser rangefinder to shoot the required offset, or tap on the map at the location where the offset, traversed point feature, or vertex will be.

   The Point/Vertex dialog appears.
4. Do one of the following:
   - To log a simple (bearing-distance) offset or radial traverse, select the Offset tab.
   - To log a complex (bearing-bearing or distance-distance) offset, select the 2 Point Offset tab.
5. Tap the Vertex button next to the required Reference Point field. The Vertex dialog appears.
6. Tap the GPS button to collect a new GNSS reference point. If you have enabled vertex averaging, a progress bar appears while the software logs the required number of positions.
7. When vertex logging is complete, tap OK to close the Vertex dialog and return to the Point/Vertex dialog.
8. If you are logging a complex offset, repeat steps 1 through 7 to log Reference Point B.
9. Edit the offset properties if necessary (for example, you may need to change the measurement method, offset values, or north reference).
10. Tap the OK button.

This is the end of the feature geometry collection for a point feature or offset vertex. To offset another vertex in the current polyline or polygon feature, repeat the entire procedure, using a new reference point for each offset vertex.

**Tip** – If you want to log a line or polygon feature with the same offset amount on each vertex, use a simple polyline/polygon offset.

**Tip** – If you want to log a feature which has all of its vertices offset from the same reference point, use a radial traverse instead of complex offsets.

To log each remaining vertex in a radial traverse:

1. Remain at the same location.
2. There is no need to log a new reference point. To re-use the reference point you have logged, do one of the following:
   - shoot the offset to the vertex with the laser
   - tap the location of the reference point on the map
3. Verify the offset properties, and then tap OK.
**Postprocessing the data**

After you have collected GNSS data, use Trimble postprocessing software to differentially correct the SSF files and apply corrections to the ArcPad AXF file or Shapefiles.

If you used a Windows Mobile powered device to collect the GNSS data, or if the computer you used for data collection does not have Trimble postprocessing software installed, you will need to transfer the data to a computer where the software is installed.

**Transferring the data**

Use either Microsoft ActiveSync technology or the Windows Mobile Device Center to copy data files from the ArcPad folder on the field computer and paste them into a folder on the destination computer. You must copy the AXF and/or Shapefiles and any associated SSF files.

The GPScorrect extension records only one SSF file, even if you create or update more than one Shapefile in ArcPad. For example, if you collect two feature types called Roads and Lakes, the files you need to transfer are:

<table>
<thead>
<tr>
<th>Roads</th>
<th>Lakes</th>
<th>GNSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads.shp</td>
<td>Lakes.shp</td>
<td>GPScorrect.ssf</td>
</tr>
<tr>
<td>Roads.shx</td>
<td>Lakes.shx</td>
<td></td>
</tr>
<tr>
<td>Roads.dbf</td>
<td>Lakes.dbf</td>
<td></td>
</tr>
</tbody>
</table>

The GPS Analyst extension and the GPS Pathfinder Office software do not use the .shx or .dbf files, but you must transfer them anyway.

**Postprocessing the Data**

This section describes how to postprocess the data using the GPS Pathfinder Office software version 5.10. It explains how to differentially correct SSF files and how to apply corrections to the AXF file or Shapefiles.

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

*Note – For information about how to import or check in GPScorrect data and then postprocess it using the Trimble GPS Analyst extension for Esri ArcGIS Desktop software, refer to the Trimble GPS Analyst Extension Getting Started Guide.*

**Differentially correcting the SSF file**

1. Start the GPS Pathfinder Office software.
2. Select the project that you have set up for your ArcPad data.

![Differential Correction Wizard](image)

If the SSF file does not appear in the list, locate it by clicking + and browsing for the file.

4. Click **Next** and then select a processing option. By default, *Automatic Carrier and Code Processing* is selected.

![Differential Correction Wizard](image)

*Note – The H-Star processing options are only available if the GNSS receiver used to collect the data has H-Star technology.*
5. Click **Next**. This page of the wizard specifies the settings that will be used to correct the data in the file.

6. If you need to change the code, output, or base correction settings:
   a. Click **Change**. The **Correction Settings** dialog appears:

   ![Correction Settings dialog](image)

   **Note** – Use the Corrected and Uncorrected settings in the Output group of the Correction Settings dialog to include uncorrected positions in the AXF file or Shapefile. You can remove these positions using the filtering options in the ShapeCorrect utility. For more information, see Applying corrections to the AXF file or Shapefiles, page 61.

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

   b. When you have made your changes, click **OK**.
7. In the Differential Correction wizard, click **Next**. The Select Base Data page of the wizard appears.

![Differential Correction Wizard](image)

Use this page to:

- Specify the location of the base files to use for differential correction.
  
  By default, downloaded base files are stored in the base file folder of the current project on your local drive. To change the folder path, click **Select**. You can also search for the base data files on the Internet, using the **Base Provider Search** option.

- 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 base data information before starting differential correction.

  Trimble recommends that you select the **Confirm base data and position before processing** option to make sure that the selected base files provide adequate coverage for the collected data and that the reference position being used is correct.
8. Click **Next**. The Output page appears. The default output settings are shown here. These settings ensure that the .cor file is created in the same folder and with the same name as the .ssf file.

*Note* – The ShapeCorrect utility requires that the .ssf file and the .cor file created during differential correction are in the same folder as the AXF file or Shapefiles to be updated.

![Differential Correction Wizard](image)

9. Click **Start** to start the differential correction process. The Correct Processing page of the wizard appears.

10. If you selected the **Confirm base data and position before processing** check box, the **Confirm** button becomes available when the base files have been downloaded or located. Click **Confirm** to proceed with processing.

11. When processing is complete, the message **Differential Correction complete** appears.

12. Click **Close** to close the wizard.

**Applying corrections to the AXF file or Shapefiles**

To improve the positions in the AXF files or Shapefiles using the differentially corrected SSF file:

1. In the GPS Pathfinder Office software, select **Utilities / Other / ShapeCorrect**.

2. Click **Browse** and locate the folder where you put the files from your field computer.
3. In the *Open* dialog, select the appropriate file type in the *Files of Type* field, and then select the AXF file or Shapefiles that you want to process, and then click *Open*. The *Selected files* field shows the file(s) that you selected.

![ShapeCorrect dialog](image)

**Note** – The corrected SSF file that you want to use must be in the same folder as the selected AXF file or Shapefiles. The ShapeCorrect utility automatically selects the corrected SSF file, which has the file extension `.cor`.

4. From the *Output GNSS Positions* group, select an output option:
   - Select the *Corrected Only* option to output positions that have been corrected by the Differential Correction wizard, positions that were corrected in real time, and non-GNSS positions.
   - Select the *Corrected and Uncorrected* option to output all positions, including positions that the Differential Correction wizard could not correct.

5. Click *OK*.

The GNSS position data from the matching SSF file is used to improve the positions in the AXF file or Shapefiles that you selected.

**Note** – The ShapeCorrect utility moves the positions in the AXF file or Shapefiles. If you have used ArcGIS or ArcView 3.x to create spatial index (.sbx and .sbn) files for a Shapefile, these files are no longer valid after merging the SSF data. Delete the spatial index files, or update them to reference the new positions.
Forms and Controls

In this chapter:

- Common elements
- Skyplot section
- Satellite Information section
- Receiver section
- Real-time section
- Plan section
- UTC Time section
- Setup section
- About section

This chapter describes the user interface of the GPScorrect extension software, and provides reference information about its forms and controls.
Common elements

This section describes the buttons and status bar that are common to all screens in the GPScorrect extension.

Section List button

To access the sections of GPScorrect extension, tap the Section list button and then select the required section from the drop-down list.

Status bar

The status bar appears at the top of all the GPScorrect screens.

Use the ArcPad button in the Status bar to hide the GPScorrect user interface and return to ArcPad. GPScorrect continues to run when its UI is hidden.

The status bar is always visible, and the icons that are displayed reflect the current status of the system and provide basic information about the status of the GNSS receiver.

Table 4.1 Status bar: Icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Battery icon](image) | Battery icon          | The left half of this icon indicates the charge level of the GNSS receiver battery, if one is connected. If the connected receiver does not provide battery status information to the GPScorrect extension, 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 GNSS 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 GNSS receiver 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. |
| ![External antenna icon](image) | External antenna icon | Indicates that an optional external antenna is connected. |
### Table 4.1 Status bar: Icons (continued)

<table>
<thead>
<tr>
<th>Icon</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Satellite_icon" /></td>
<td>Satellite icon</td>
<td>Shows whether the geometry of the satellites is good or poor, as configured in the GNSS settings area (see GNSS settings area, page 70). The satellite icon flashes when the geometry of the satellites (their PDOP or HDOP) is poor. The number beside the icon indicates how many satellites are being used to compute GNSS positions. The number flashes when not enough satellites are available.</td>
</tr>
<tr>
<td><img src="image" alt="Estimated_Accuracy_icon" /></td>
<td>Estimated Accuracy icon</td>
<td>Shows the estimated accuracy of the GNSS position. The type of estimated accuracy value shown depends on the parameters set in the Accuracy Settings form (see page 88). The estimated accuracy value may be the estimated accuracy in the field, or it may be the predicted accuracy after postprocessing. To show the predicted postprocessed accuracy, there must be a data file open and the software must be logging GNSS positions. When logging H-Star or carrier data, the predicted postprocessed accuracy value applies to all the positions collected since you achieved lock on the required minimum number of satellites. For all other receivers, this value applies only to the current position. The predicted postprocessed accuracy has a 68% confidence level, which means that 68% of the time the postprocessed position will be within the predicted postprocessed accuracy value shown when the position was collected. By default, this icon shows the estimated accuracy in the field. The direction of the arrow indicates whether the estimated accuracy shown is for the horizontal or the vertical accuracy of the current feature. <strong>Note</strong> – <em>The value shown depends on several factors, including satellite geometry and the type of GNSS receiver that is connected.</em> An arrow with no estimated accuracy value indicates that the software is unable to calculate the estimated accuracy. Tap the icon for more information.</td>
</tr>
<tr>
<td><img src="image" alt="Real-time_external_source_icon" /></td>
<td>Real-time external source icon</td>
<td>Shows that the GNSS receiver is receiving real-time corrections from an external source, such as a radio.</td>
</tr>
<tr>
<td><img src="image" alt="Real-time_VRS_network_icon" /></td>
<td>Real-time VRS network icon</td>
<td>Shows that the GPScorrect extension is receiving real-time differential corrections from a VRS™ network.</td>
</tr>
<tr>
<td><img src="image" alt="Real-time_external_beacon_icon" /></td>
<td>Real-time external beacon icon</td>
<td>Shows that the GNSS receiver is receiving real-time corrections from an external beacon receiver such as a GeoBeacon receiver.</td>
</tr>
<tr>
<td><img src="image" alt="Integrated_SBAS_icon" /></td>
<td>Integrated SBAS icon</td>
<td>Shows that the GNSS receiver is receiving real-time corrections from a Satellite Based Augmentation System (SBAS).</td>
</tr>
</tbody>
</table>

**Note** – *If the real-time signal is lost, the current real-time icon flashes. If no icon is visible, the GNSS receiver is using autonomous GNSS to calculate its position.*
Skyplot section

Use the Skyplot section to view a graphical display of the satellites available to the receiver. The Skyplot section is the default section displayed when you open the GPSCorrect extension.

To access the Skyplot section when another section is visible, tap the arrow on the Section button next to the status bar and from the drop-down list select Skyplot.

The Skyplot section includes the following items:

- Skyplot (see page 67)
- SNR graph (see page 68)
- Satellite geometry indicator (see page 68)
- Information fields (see page 69)
- Message line (see page 69)
- GNSS Settings area (see page 70)

The Skyplot section also has a Setup button (see page 75).
Skyplot

When you turn the receiver on, it begins to track visible satellites and to calculate the current position. Once the first position is displayed, subsequent positions are updated once per second.

Tip – If no positions are computed, look for obstructions that might be blocking satellite signals. Move away from any possible obstructions. If the receiver is still not computing positions, see Troubleshooting, page 95.

Numbered boxes represent the satellites currently available to the Trimble GPsCorrect extension.

- Satellites shown as filled black boxes are currently being used by the Trimble GPsCorrect extension to compute GNSS positions.
- Satellites shown as white boxes are being tracked, but are not being used to compute positions (for example, if their elevation is too low).
- Satellites shown without boxes are available, but are not being tracked (for example, if their signal is blocked by a tall building).
- Satellites that have an "R" prefix are GLONASS satellites.
- If an SBAS satellite is being tracked, its location is indicated by this icon: 🌔.

The black outer circle represents the horizon (at 0°).

The satellites near the center of the circle are higher in the sky (overhead), while those toward the edge are closer to the horizon. The location of a satellite can be determined by noting its direction (N, S, E, W) and its approximate elevation in the skyplot.

The inner circle, which is red on a color screen, represents the configured minimum elevation (see Min Elevation, page 88). When the minimum elevation value is changed, the inner circle of the skyplot changes diameter accordingly.

- If the minimum elevation is increased, the inner circle gets smaller and only those satellites higher in the sky are used to compute GNSS positions.
• If the minimum elevation is decreased, the inner circle gets larger, and satellites closer to the horizon are included when GNSS positions are computed.

The skyplot rotates (like a compass) to indicate the direction that you are travelling in. Your direction is calculated from the last GNSS positions received. If no positions have been received recently, the direction shown may not be correct.

**Note** – *The skyplot only rotates if you are moving.*

Tap the skyplot to display a tooltip showing details about the area you have tapped. See Tooltips, page 69.

**SNR graph**

The Signal-to-Noise Ratio (SNR) bar graph to the left of the skyplot is a graphical representation of the L1 frequency signal quality of each satellite that the GNSS receiver is currently tracking. A black bar represents a satellite with a signal strength above the configured minimum level. An empty bar represents a satellite that is not being used to compute GNSS positions because its signal strength is below the configured minimum level.

The vertical red line shows the configured minimum SNR value.

Tap the SNR graph to display a tooltip showing details about the area you have tapped. See Tooltips below.

**Satellite geometry indicator**

The satellite geometry indicator to the right of the skyplot is a graphical representation of the overall quality of the GNSS positions computed. The white horizontal bar shows the configured minimum quality value, and the level of black inside the indicator shows the current quality value.

Tap the satellite geometry indicator to display a tooltip showing details about the area that you tapped. See Tooltips below.

The quality of the computed positions is a function of the geometry of the visible satellites (how they are positioned in the sky relative to each other and you). When the satellites are well spaced, and cover a large portion of the sky, the GNSS receiver can compute accurate positions and the level inside the indicator is high. If satellites are grouped together in the sky, the precision of the computed positions is reduced, and the level inside the indicator is low.
**Tool tips**

When you tap an item in the Skyplot section, a tooltip appears. The tooltip provides detailed information about the item that you tapped.

<table>
<thead>
<tr>
<th>Skyplot section item</th>
<th>Tooltip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar on SNR graph</td>
<td>Satellite pseudo-random number (PRN) and SNR value(s)</td>
</tr>
<tr>
<td>White box on indicator below SNR graph</td>
<td>Configured minimum SNR value</td>
</tr>
<tr>
<td>Geometry indicator</td>
<td>Current PDOP or HDOP value</td>
</tr>
<tr>
<td>Horizontal bar on geometry indicator</td>
<td>Configured maximum PDOP or HDOP value</td>
</tr>
<tr>
<td>Satellite on skyplot</td>
<td>Satellite PRN, SNR value(s), elevation and bearing</td>
</tr>
<tr>
<td>Inner circle on skyplot</td>
<td>Configured minimum elevation value</td>
</tr>
</tbody>
</table>

**Information fields**

Information fields show the current GNSS position and settings.

*Note* – *If the screen on the field computer uses a landscape orientation, the information fields appear on the right of the skyplot.*

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS position</td>
<td>The current GNSS position is displayed in terms of the Latitude/Longitude coordinate system.</td>
</tr>
<tr>
<td></td>
<td><em>Note</em> – <em>Positions viewed on the screen are not saved. To save them, start a feature in ArcPad.</em></td>
</tr>
<tr>
<td>PDOP</td>
<td>This field only appears if you have configured a maximum PDOP. The Position Dilution of Precision (PDOP) is a numeric value that represents</td>
</tr>
<tr>
<td></td>
<td>the satellite geometry. If you set a maximum PDOP value (see <em>Max PDOP, page 87</em>), and the PDOP rises above the value you set, the GNSS receiver</td>
</tr>
<tr>
<td></td>
<td>stops computing positions. To set the maximum PDOP value, tap the Setup button to open the GNSS Settings form (see <em>page 86</em>).</td>
</tr>
<tr>
<td>HDOP</td>
<td>This field only appears if you have configured a maximum HDOP. The Horizontal Dilution of Precision (HDOP) represents the horizontal</td>
</tr>
<tr>
<td></td>
<td>component of the PDOP. If you set a Max HDOP value (see <em>Max HDOP, page 87</em>), and the HDOP rises above the value you set, the GNSS receiver</td>
</tr>
<tr>
<td></td>
<td>stops computing positions. To set the maximum HDOP value, tap the Setup button to open the GNSS Settings form (see <em>page 86</em>).</td>
</tr>
</tbody>
</table>

**Message line**

The message line is displayed midway down the Skyplot section, below the skyplot. The message line displays error or warning messages.
**Note** – The message line also appears below the table in the Satellite Information section (see page 71).

Messages only appear when there is a problem or a condition you should be aware of. For example, if satellite geometry is good, no message appears; when it is poor, a message appears.

### Table 4.4 Messages

<table>
<thead>
<tr>
<th>Message</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS disconnected</td>
<td>The GNSS receiver is not connected.</td>
</tr>
<tr>
<td>Attempting to connect to GNSS receiver</td>
<td>The GPScorrect extension is trying to establish a connection with the GNSS receiver. This message appears when you start the GPScorrect extension, and whenever you try to reconnect to GNSS.</td>
</tr>
<tr>
<td>Antenna is not connected to GNSS receiver</td>
<td>The GNSS receiver cannot detect the antenna, or the antenna cable is not connected to the GNSS receiver.</td>
</tr>
<tr>
<td>Heading locked</td>
<td>The GNSS receiver is stationary or is moving too slowly to calculate an accurate heading. When the heading is locked, the skyplot does not rotate.</td>
</tr>
<tr>
<td>Poor satellite geometry</td>
<td>The PDOP or HDOP is higher than the level you specified in the GNSS Settings form (see page 86).</td>
</tr>
</tbody>
</table>

*Note – When the geometry of the satellites is poor, the satellite icon in the Status bar flashes. This icon is always visible, regardless of which section you are in.*

| Too few satellites                           | The receiver is not tracking enough satellites to compute a position.                        |

*Note – When there are too few satellites to compute positions, the number below the satellite icon in the Status bar flashes. This icon is always visible, regardless of which section you are in.*

**GNSS settings area**

The GNSS settings area appears at the bottom of the Skyplot section and the Satellite Information section (see page 71). It shows the current GNSS settings. GNSS settings can be defined using Smart Settings, or custom settings.

**Using Smart Settings**

To configure GNSS settings for the receiver to increase the precision of your data, and to minimize the effect of atmospheric interference and poor satellite geometry, select Use Smart Settings. All other fields in the form are hidden.

To select Smart Settings, tap the Setup button near the top of the screen to open the GNSS Settings form (see page 86). Then select the Use Smart Settings check box.
**Custom mode**

In Custom mode, the GNSS settings area shows the configured limits for PDOP or HDOP, elevation, and SNR. To change to Custom mode, tap the Setup button near the top of the screen to open the GNSS Settings form (see page 86). Then clear the Use Smart Settings check box.

**Satellite Information section**

Use the Satellite Information (Sat Info) section to view information about satellites in text form.

To display the Satellite Information section, tap the arrow on the Section button next to the status bar and from the drop-down list select Sat Info.

The table below describes the information in each column of the table that appears in the Satellite Information section.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
</table>
| Use indicator | Filled circle (•) Satellite is being used to calculate positions.  
Empty circle (○) Satellite is visible but is not being used to calculate positions (for example, if the satellite's elevation is below the configured minimum elevation).  
No circle Satellite is available, but is not being tracked by the GPScorrect extension (for example, if the satellite's signal is blocked by a tall building). |
| PRN | The pseudo-random number of each satellite. A satellite is identified by its unique PRN. Satellites that have an “R” prefix are GLONASS satellites. |
| L1 SNR | The current signal-to-noise ratio of the L1 signal from each satellite, in dBHz. A satellite that is below the configured Min SNR (see page 88) is not used to compute positions. |
| L2 SNR | The current signal-to-noise ratio of the L2 signal from each satellite, in dBHz.  
*Note – If a satellite is marked as “unhealthy” by the GNSS Control Segment, the characters U/H appear in the SNR columns for that satellite.* |
| Elev | The current elevation above the horizon of each satellite. A satellite that is below the configured Min Elevation (see page 88) is not used to compute positions. |
| Br(T) | The current bearing to each satellite. This bearing is shown relative to true north. |
As in the Skyplot section, the following appear at the bottom of the screen:

- Information fields (see page 69)
- Message line (see page 69)
- GNSS Settings area (see page 70)

**Information fields**

Information fields in the Satellite Information screen show the current GNSS position and settings.

*Note – If the field computer's screen uses the landscape orientation, the information fields appear to the right of the Satellite Information screen.*

Table 4.6 Satellite Information section: Information fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almanac</td>
<td>The date of the last almanac received from satellite broadcasts.</td>
</tr>
<tr>
<td>PDOP</td>
<td>The current PDOP value, see PDOP, page 87. This field only appears if you have configured a maximum PDOP.</td>
</tr>
<tr>
<td>HDOP</td>
<td>The current HDOP value, see Max HDOP, page 87. This field only appears if you have configured a maximum HDOP.</td>
</tr>
</tbody>
</table>

**Receiver section**

Use the Receiver section to view information about the connected GNSS receiver.

To display the Receiver section, tap the arrow on the Section button next to the status bar and from the drop-down list select *Receiver.*
Table 4.7  Receiver section: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS</td>
<td><strong>The current status of the GNSS receiver connection. The options are:</strong></td>
</tr>
<tr>
<td>• Connected</td>
<td>The GPScorrect extension is connected to the GNSS receiver.</td>
</tr>
<tr>
<td>• Attempting to connect to GNSS</td>
<td>The GPScorrect extension is trying to connect to the receiver. If this message appears, no other fields appear.</td>
</tr>
<tr>
<td>• GNSS is disconnected</td>
<td>The receiver has been disconnected from the GPScorrect extension. If this message appears, no other fields appear.</td>
</tr>
<tr>
<td>• No GNSS detected. Check cables, batteries etc</td>
<td>The GPScorrect extension has failed to detect the receiver, because it is not connected to the port specified in the GNSS Settings form (see page 86), or has no power. If this message appears, no other fields appear.</td>
</tr>
<tr>
<td>Antenna</td>
<td><strong>The current status of the antenna connection. The options are:</strong></td>
</tr>
<tr>
<td>• Connected</td>
<td>The GPScorrect extension is connected to a GNSS receiver, and the receiver is connected to a GNSS antenna. The antenna icon also appears in the status bar.</td>
</tr>
<tr>
<td>• Not connected</td>
<td>No antenna is connected.</td>
</tr>
<tr>
<td>Position status</td>
<td><strong>An indicator of the GNSS status. The options are:</strong></td>
</tr>
<tr>
<td>• Calculating positions</td>
<td>The receiver is computing GNSS position fixes. The current satellite constellation is therefore acceptable.</td>
</tr>
<tr>
<td>• Poor satellite geometry</td>
<td>The current PDOP or HDOP value is greater than the maximum value, so the GNSS receiver is not computing GNSS positions.</td>
</tr>
<tr>
<td>• Too few satellites</td>
<td>The GNSS receiver has acquired satellites, but has not acquired enough satellites to compute a position.</td>
</tr>
<tr>
<td>• Unavailable</td>
<td>No position is available. For example, there may be no antenna connected to the receiver.</td>
</tr>
<tr>
<td>Almanac</td>
<td>The date of the almanac.</td>
</tr>
<tr>
<td>Battery</td>
<td>The current level of charge in the GNSS receiver battery. This value appears as a percentage.</td>
</tr>
<tr>
<td>Receiver type</td>
<td>The name of the receiver model currently connected to the field computer.</td>
</tr>
<tr>
<td>Navigation version</td>
<td>The version number of the navigation firmware that is installed in the connected GNSS receiver.</td>
</tr>
<tr>
<td>Signal processor version</td>
<td>The version number of the signal processing firmware that is installed in the connected GNSS receiver.</td>
</tr>
</tbody>
</table>
**Real-time section**

Use the screens in the Real-time section to view information about the real-time correction sources you have set up.

To view real-time information, tap the arrow on the Section button next to the status bar and from the drop-down list select “Real-time.”

By default, the real-time information screen that appears is the **Real-time Summary** screen. Depending on the real-time correction sources that you have set up, the following detailed status screens may also be available:

- **External Source** status screen (see page 76)
- **External Beacon** status screen (see page 77)
- **Integrated SBAS** status screen (see page 79)

Use the Summary list button to move between the real-time status screens. When you tap the Summary list button, a list of status screens appears. Select an option to open the corresponding screen.

**Real-time Summary screen**

The **Real-time Summary** screen contains a heading for each real-time correction source you have set up. The heading shows the name of the source. The heading shows the type of correction source. The order of the correction sources matches the order of the choices you have made in the Setup section using the **Real-time Settings** form (see page 89).

The correction source currently in use for real-time differential corrections has an icon beside its name. The icon used matches the icon that appears in the status bar.

If no icon is shown, the GPScorrect extension is either waiting for real-time corrections to resume, or is logging uncorrected positions. If real-time corrections are not available, the real-time icon in the status bar flashes.

For more information about the summary information provided for each real-time correction source in the **Real-time Summary** screen, see Table 4.8 through Table 4.12 on pages 75 through 75.

For full status information on any source you have configured, tap the Summary list button and select the source name. The screen also includes a Setup button below the status bar for quick access to real-time correction source settings in the **Real-time Settings** form (see page 89).
Table 4.8  Real-time Summary screen: External Source fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Source</td>
<td>The status of the External Source real-time correction source. The options are:</td>
</tr>
<tr>
<td></td>
<td>• In use This source is being used for real-time differential corrections.</td>
</tr>
<tr>
<td></td>
<td>• Waiting This source is configured but a lower-ranked choice is currently in use. The status of the source is being monitored and the GPScorrect extension will switch to this source if it becomes available and is the highest-ranked available source.</td>
</tr>
<tr>
<td></td>
<td>• (none) This source is configured but is not being monitored or used.</td>
</tr>
</tbody>
</table>

When the GNSS receiver is using an external source for real-time corrections, the following icon appears to the left of this field:
• if the external source is a single base
• if the external source is a VRS network

Table 4.9  Real-time Summary screen: External Beacon fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Beacon</td>
<td>The status of the External Beacon real-time correction source. The options are the same as the options for the External Source status field (see Table 4.8). When the GNSS receiver is using an external beacon for real-time corrections, the external beacon icon appears to the left of this field.</td>
</tr>
</tbody>
</table>

Frequency | The current beacon frequency being tracked or locked on to by the external beacon receiver.                                                |
State      | The real-time operating status of the external beacon.                                                                                        |
SNR        | The signal-to-noise ratio of the beacon signal that is being monitored.                                                                      |

Table 4.12 Real-time Summary screen: SBAS fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated SBAS</td>
<td>The status of the Integrated SBAS real-time correction source. The options are the same as the options for the External Source status field (see Table 4.8), with the addition of</td>
</tr>
<tr>
<td></td>
<td>• Not supported - The connected GNSS receiver does not support real-time differential corrections from this source.</td>
</tr>
</tbody>
</table>

When the GNSS receiver is using an integrated SBAS receiver for real-time corrections, the integrated SBAS icon appears to the left of this field.

SNR | The signal-to-noise ratio of the SBAS satellite signal that is being monitored.                                                            |

**Setup button**

A Setup button below the status bar in each screen in the Real-time section provides a shortcut to the *Real-time Settings* form (see page 89) in the Setup section.
To configure real-time settings, tap the Setup button. The Real-time Settings form appears. Make any changes you require, and then tap OK to return to the status screen for the real-time correction source.

**External Source status screen**

*Note – If you have configured an external beacon as the external source, the External Beacon status screen (see page 77) is available instead of the External Source status screen.*

The External Source status screen shows detailed information about the external real-time correction source you have set up.

To display the External Beacon status screen, tap the arrow on the Section button next to the status bar and from the drop-down list select Real-time to open the Real-time section. Then tap the arrow on the Summary list button below the status bar, and from the drop-down list select External.

<table>
<thead>
<tr>
<th>Table 4.13</th>
<th>External Source status screen: Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field</strong></td>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| External Source | The status of the external real-time correction source. The options are:  
| • In use | The external real-time correction source is currently being used to correct positions in real time.  
| • Waiting | A lower-ranked choice is currently being used to correct positions in real time. The status of the external source is being monitored and the Trimble GPSCorrect extension will switch to the external source if it becomes available and it is the highest-ranked available source.  
| • Not in use | The external real-time correction source is set up but is not currently being used for real-time differential corrections. |
| Correction Type | This field only appears if the external source is a VRS network.  
| | The type of correction being received from the VRS network. The options are:  
| • Network | The VRS network is providing a network solution, using corrections from more than one base station to calculate the position of the roving receiver.  
| • Single Station | The VRS network is operating in raw mode, and is using only one base station to provide real-time differential corrections. |
| Connection Up-time | This field only appears if the external source is a VRS network.  
| | The duration, in hours, minutes, and seconds, of the current connection to the VRS network. |
Forms and Controls

4

External Beacon status screen

Note – If you have configured an external source that is not an external beacon receiver, the External Source status screen (see page 76) is available instead of the External Beacon status screen.

The External Beacon status screen shows detailed information about the external beacon receiver you have set up as an external real-time correction source.

To display the External Beacon status screen, tap the arrow on the Section button next to the status bar and from the drop-down list select Real-time to open the Real-time section. Then tap the arrow on the Summary list button below the status bar, and from the drop-down list select Ext. Beacon.

Table 4.13 External Source status screen: Fields (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Received</td>
<td>This field only appears if the external source is a VRS network. The amount of data, in megabytes, kilobytes, or bytes as appropriate, that has been sent and received since the connection was established.</td>
</tr>
<tr>
<td>Last correction</td>
<td>The time, in seconds, since the last correction message from this source was received by the GNSS receiver.</td>
</tr>
</tbody>
</table>

Table 4.14 External Beacon status screen: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Beacon</td>
<td>The status of the external beacon receiver. The options are:</td>
</tr>
<tr>
<td></td>
<td>• In use The external beacon receiver is currently being used to correct positions in real time.</td>
</tr>
<tr>
<td></td>
<td>• Waiting A lower-ranked choice is currently being used to correct positions in real time. The status of the external beacon receiver is being monitored and the Trimble GPSCorrect extension will switch to the external beacon receiver if it becomes available and it is the highest-ranked available source.</td>
</tr>
<tr>
<td></td>
<td>• Not in use The external beacon receiver is set up but is not currently being used for real-time differential corrections.</td>
</tr>
<tr>
<td></td>
<td>• Not supported The connected GNSS receiver does not support real-time differential corrections from an external beacon receiver.</td>
</tr>
<tr>
<td>Frequency</td>
<td>The current beacon station frequency being tracked or locked on to by the external beacon receiver.</td>
</tr>
<tr>
<td></td>
<td>Note – Use the configuration software provided with the beacon receiver to set the external beacon frequency.</td>
</tr>
<tr>
<td>State</td>
<td>The operating state of the external beacon receiver. Select an option from the drop-down list.</td>
</tr>
<tr>
<td>SNR</td>
<td>The signal-to-noise ratio, in decibels, of the beacon signal the external beacon receiver is monitoring.</td>
</tr>
</tbody>
</table>
Table 4.14  External Beacon status screen: Fields (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last correction</td>
<td>The time, in seconds, since the last correction message from this source was received by the GNSS receiver.</td>
</tr>
</tbody>
</table>
| Beacon mode                        | The mode the external beacon receiver is operating in. The options are:  
| • Best                             | The external beacon receiver tracks the best frequency available and automatically switches frequency if a better signal is available.  
| • Fixed                            | The external beacon receiver tracks only the frequency you specify in the beacon receiver configuration software.                               |
| Filter applied                     | Indicates whether a filter has been applied to the list of frequencies the external beacon receiver can track.                                  |
| External beacon battery level      | The remaining battery power of the external beacon receiver, as a percentage.                                                                 |
| Diagnostic Information             | A heading used to group together fields that contain information for troubleshooting the beacon signal.                                       |
| Error Rate                         | The RTCM Word Error Rate, which shows the proportion of RTCM words that have parity errors. The error rate should be 0.1 or less.          |
| Input Level                        | The intensity level of the electro-magnetic field. This value should be between 10 and 100 dBuV/M.                                             |
| Data Rate                          | The data modulation rate from the beacon.                                                                                                |
| Health                             | The health of the beacon signal. Select an option from the drop-down list.                                                                  |
Integrated SBAS status screen

The *Integrated SBAS* status screen shows detailed information about the SBAS correction service you have set up as a real-time correction source.

To display the *Integrated SBAS* status screen, tap the arrow on the Section button next to the status bar and from the drop-down list select *Real-time* to open the Real-time section. Then tap the arrow on the Summary list button below the status bar, and from the drop-down list select *SBAS*.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated SBAS</td>
<td>The status of this real-time correction source. The options are:</td>
</tr>
<tr>
<td>*In use*</td>
<td>The SBAS real-time correction source is being used to correct positions in real time.</td>
</tr>
<tr>
<td>*Waiting*</td>
<td>A lower-ranked choice is currently being used to correct positions in real time. The status of the SBAS is being monitored and the Trimble GPScorrect extension will switch to the SBAS source if it becomes available and it is the highest-ranked available source.</td>
</tr>
<tr>
<td>*Not in use*</td>
<td>The SBAS real-time correction source is set up but is not currently being used for real-time differential corrections.</td>
</tr>
<tr>
<td>*Not supported*</td>
<td>The connected GNSS receiver does not support corrections from an SBAS satellite.</td>
</tr>
<tr>
<td>SNR</td>
<td>The signal-to-noise ratio, in decibels, of the selected SBAS satellite signal. An SNR above 3.0 dBHz indicates that the signal is usable.</td>
</tr>
<tr>
<td>Last correction</td>
<td>The time, in seconds, since the last correction message from this source was received by the GNSS receiver.</td>
</tr>
</tbody>
</table>
Plan section

The Plan section enables you to plan your next data collection session while you are in the field. You can view an animated skyplot and DOP graph for your current position over the next 12 hours, and use these to plan data collection around the times of the day when satellite geometry is best. See Planning the data collection session, page 53.

To display the Plan section, tap the arrow on the Section button next to the status bar and from the drop-down list select Plan.

The Plan section includes:

- Planning skyplot (see page 80)
- Message line (see page 81)
- DOP graph (see page 81)

For information about how to preview a data collection session, see Previewing a data collection session, page 82.

Planning skyplot

The planning skyplot is similar to the skyplot shown in the Skyplot section. The outer black circle represents the horizon, while the inner red circle represents the minimum elevation that you have set. Each satellite that is in view is represented by a box containing the pseudo-random number (PRN) of the satellite. Each satellite is colored for easy identification.

Note – Unlike the skyplot in the Skyplot section, the planning skyplot shows all visible GNSS satellites, even if they are below the configured minimum elevation or their current SNR value is too low. To check which satellites are currently being tracked, use the skyplot in the Skyplot section (see page 66).

The time displayed in the lower right corner of the planning skyplot indicates the exact time that the skyplot is showing. This is the time selected on the slider control on the DOP graph (see page 81).

When you open the Plan section, the orientation of the planning skyplot matches the current heading shown on the skyplot in the Skyplot section (see page 66). The planning skyplot does not rotate as your heading changes, but if your heading becomes locked then the orientation is updated to this locked heading. This can happen, for example, if you are not moving fast enough for an accurate heading to be calculated.
DOP graph

The DOP graph shows the projected PDOP or HDOP values over the specified time period. The horizontal line indicates the currently configured maximum PDOP or HDOP.

The slider control shows the period that is selected in the Hours list (see page 82) of the Plan section. To view the skyplot for a specific time, drag the slider control across the graph, or tap the left or right arrow button. As the position of the slider control changes, the skyplot and time are updated to match the selected time.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>PDOP</th>
<th>HDOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyan bar</td>
<td>&lt; 4</td>
<td>&lt; 2.5</td>
</tr>
<tr>
<td>Green bar</td>
<td>4 to 6</td>
<td>2.5 to 4</td>
</tr>
<tr>
<td>Yellow bar</td>
<td>6 to 8</td>
<td>4 to 5.5</td>
</tr>
<tr>
<td>Red bar</td>
<td>&gt; 8</td>
<td>&gt; 5.5</td>
</tr>
<tr>
<td>Blank with black left and right borders</td>
<td>Not enough satellites are available to compute a position.</td>
<td></td>
</tr>
</tbody>
</table>

Message line

The message line below the planning skyplot in the Plan section displays error or warning messages. Messages only appear when there is a problem or a condition you should be aware of.

Table 4.16 Plan section: Messages

<table>
<thead>
<tr>
<th>Message</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording almanac</td>
<td>The GPScorrect extension is downloading an almanac from the connected GNSS receiver.</td>
</tr>
<tr>
<td>Need almanac</td>
<td>The GPScorrect extension does not have a current almanac of satellite locations.</td>
</tr>
<tr>
<td>Need position</td>
<td>The GNSS receiver has stopped computing positions.</td>
</tr>
<tr>
<td>Heading locked</td>
<td>The GNSS receiver is stationary or moving too slowly to calculate an accurate heading. The rotation of the planning skyplot does not reflect the current heading.</td>
</tr>
</tbody>
</table>
**Previewing a data collection session**

Use the buttons and options provided in the Plan section to preview a data collection session.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play</td>
<td>Tap <strong>Play</strong> to begin playback of a session, or to resume playback after pausing. When the session is playing, the button changes to the <strong>Pause</strong> button. Tap the <strong>Pause</strong> button to temporarily pause playback. At the end of playback, the button changes to the <strong>Home</strong> button. Tap the <strong>Home</strong> button to return to the beginning of the session, ready for playback again.</td>
</tr>
<tr>
<td>Now</td>
<td>Tap <strong>Now</strong> to set the session to the current time. The time shown on the skyplot and the position of the slider control on the DOP graph (see page 81) change to match the current time.</td>
</tr>
<tr>
<td>Report</td>
<td>Tap the Report button to create an HTML file in the My Documents folder that contains details of the current planning session.</td>
</tr>
<tr>
<td>Setup</td>
<td>Tap the Setup button and then tap <strong>GNSS Settings</strong> to open the <strong>GNSS Settings</strong> form (see page 86).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Show Orbits | Select the type of orbit information to display on the skyplot. The options are:  
  - Off: Do not show any orbit information.  
  - Trails: Show an orbit trail for each satellite. During session playback, an orbit trail plots where the satellite has been in this session. The trail is a solid line in the same color that is used to represent the satellite.  
  - Trajectories: Show an orbit trajectory for each satellite. At the beginning of playback, the entire trajectory of each satellite is visible, showing where it will travel during the session. The trajectory is a dashed line in the same color that is used to represent the satellite. During session playback, each satellite erases its trajectory as it moves over the plotted positions. |
| Hours | Specify how many hours the planning session will cover. The session begins at the last full hour before the current time. For example, if the time is 10:56, the session starts at 10:00. A session can cover up to twelve hours. |
**UTC Time section**

The UTC Time screen shows the current Universal Time Coordinated (UTC) time, calculated from the GPS time reported by the connected GNSS receiver.

To display the UTC Time section, tap the arrow on the Section button next to the status bar and from the drop-down list select *UTC Time*.

Whenever a GNSS receiver is connected, the GPScorrect extension synchronizes its UTC time display every five seconds with the time reported by the GNSS receiver. The UTC time is always up to date when the GPScorrect extension is connected to GNSS.

If the receiver is disconnected, the extension uses the field computer's internal clock to update the UTC time display. However, the internal clock is not as accurate as the GPS time from the receiver, so the time displayed becomes less and less accurate. After 24 hours without synchronization (that is, without reconnecting to GNSS), the UTC time displayed is no longer accurate and is replaced with the message *Time not available. Connect to GNSS.*

**Setup section**

Use the *Setup* section to perform common setup tasks, and to access the following forms:

- *Logging Settings* form (see page 84)
- *GNSS Settings* form (see page 86)
- *Real-time Settings* form (see page 89)

To open the Setup section, tap the arrow on the Section button next to the status bar and from the drop-down list select *Setup*. The Setup screen appears.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset GNSS receiver</td>
<td>Resets the GNSS receiver to its default settings. A reset clears the receiver memory, deletes the almanac and any configuration data, and returns the receiver to its default state. <strong>Note</strong> – If the GNSS receiver does not operate as expected after it has been connected to another field computer or another data collection application, reset the receiver. This clears any settings that may prevent it from working properly with the Trimble GPScorrect extension.</td>
</tr>
</tbody>
</table>
Use the **Logging Settings** form to configure settings that control what data is stored, and how.

To open the **Logging Settings** form, tap the arrow on the Section button next to the status bar and from the drop-down list select **Setup** to open the Setup section. Then tap **Logging Settings**.

### Logging Settings form

Table 4.20  Setup screen: Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ext Source</td>
<td>This button only appears if you have configured a VRS network as the preferred real-time source, the connection method is set to Manual, and ArcPad is connected to GNSS. Connects to or disconnects from the VRS network. This button is a shortcut to the Connect and Disconnect from External Source options (see Table 4.19 below).</td>
</tr>
<tr>
<td>Logging Settings</td>
<td>Opens the <strong>Logging Settings</strong> form, see page 84.</td>
</tr>
<tr>
<td>GNSS Settings</td>
<td>Opens the <strong>GNSS Settings</strong> form, see page 86.</td>
</tr>
<tr>
<td>Real-time Settings</td>
<td>Opens the <strong>Real-time Settings</strong> form, see page 89.</td>
</tr>
</tbody>
</table>

#### Table 4.21  Logging Settings form: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log GNSS to SSF</td>
<td>On</td>
<td>This field specifies whether to log GNSS position data to an SSF file.</td>
</tr>
<tr>
<td>Antenna Height</td>
<td>0.00 m</td>
<td>This read-only field displays the antenna height set in the GPS Preferences dialog in ArcPad. To specify antenna details, tap the Setup button beside this field. The Antenna Settings form appears (see page 85).</td>
</tr>
</tbody>
</table>
**Antenna Settings form**

Use the Antenna Settings form to specify the antenna type you want to use, and the height of the antenna.

To open the Antenna Settings form, tap the Setup button beside the Antenna Height field on the Logging Settings form (see page 84).

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>0.00 m</td>
<td>This read-only field displays the height of the GNSS antenna connected to the GNSS receiver, that you set in the GNSS Preferences dialog in ArcPad. This value is used as a vertical offset on each position.</td>
</tr>
<tr>
<td>Type</td>
<td>Unknown</td>
<td>The type of antenna that is connected to the GNSS receiver. If the GPScorrect extension is connected to a receiver that can only connect to an internal antenna, this field automatically shows the correct antenna type. To specify the antenna that you are using, either select an option from this field, or select the correct part number in the Part Number field. When you change a value in one of these two fields, the other field updates accordingly.</td>
</tr>
<tr>
<td>Part Number</td>
<td>n/a</td>
<td>The part number of the antenna that is connected to the GNSS receiver. If the receiver can only connect to an internal antenna, this field automatically shows the correct part number. To specify the antenna that you are using, either select an option from this field, or select the correct antenna type in the Type field. When you change a value in one of these two fields, the other field updates accordingly.</td>
</tr>
<tr>
<td>Measure Height To</td>
<td>Bottom of antenna mount</td>
<td>The point on the antenna that you have measured to. The GPScorrect extension automatically adjusts the antenna height by the distance between the measurement location and the Antenna L1 Phase Center (APC).</td>
</tr>
</tbody>
</table>
**GNSS Settings form**

Use the *GNSS Settings* form to control the precision you require for GNSS positions.

To open the *GNSS Settings* form, tap the arrow on the Section button next to the status bar and from the dropdown list select *Setup* to open the Setup section. Then tap *GNSS Settings*.

Alternatively, tap the Setup button ![Setup button](image) in the Skyplot section or the Satellite Information section.

**Configuring accuracy display settings**

The fields below the *Use Smart Settings* check box show the selected parameters for displaying and calculating the estimated accuracy.

To change how the estimated accuracy is displayed in the status bar, tap the Setup button ![Setup button](image) below the *Accuracy Settings* field. The *Accuracy Settings* form appears (see page 88).

**Using Smart Settings**

Use Smart Settings to increase the precision of your data, and to minimize the effect of atmospheric interference and poor satellite geometry. When you select *Use Smart Settings*, all other fields in the form are hidden.

*Note* – Trimble recommends that you use accuracy-based logging (see *Accuracy Settings form*, page 88) and Smart Settings to control the quality of the GNSS positions logged and let the GPScorrect extension manage the logging of positions based on your required accuracy.

Using Smart Settings, the GNSS receiver generates the best possible position for any given environment, without the need for you to adjust receiver settings to match the conditions. Regardless of whether you are working under canopy, in wide open spaces, or somewhere in between, Smart Settings automatically generates the best solution possible.

Using traditional mask techniques in open conditions, weak signals can accidentally degrade the accuracy of the position if masks are too relaxed, whereas in obstructed conditions, more satellites are needed to help maintain optimum accuracy if masks are set too strictly. Using Smart Settings, the receiver uses all available GNSS information to determine which combination of satellites to use to deliver the best position. Once you set the receiver to use Smart Settings, the receiver does the rest.
Configuring GNSS settings in Custom mode

To configure GNSS settings in Custom mode, clear the *Use Smart Settings* check box. The remaining fields change to editable numeric fields. Enter values in these fields to specify the required GNSS settings.

Table 4.23 GNSS Settings form: Controls and fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy Settings</td>
<td>Horizontal; In the field</td>
<td>This read-only field displays the parameters for displaying and calculating the estimated accuracy set in the Accuracy Settings form. To change the parameters, tap the Setup button below this field. The Accuracy Settings form appears (see page 88).</td>
</tr>
</tbody>
</table>
| DOP Type       | PDOP    | This field does not appear if *Use Smart Settings* is selected. To set a DOP type, use Custom mode. The type of maximum DOP value to use. The options are:  
• PDOP Set a maximum PDOP. When you select this option, the Max PDOP field (see page 87) appears.  
• HDOP Set a maximum HDOP. When you select this option, the Max HDOP (see page 87) appears.  
A low DOP value indicates that the visible satellites are widely separated in the sky, which gives better position information. When the DOP value rises above the maximum value, the Trimble GPScorrect extension stops logging GNSS positions. |
| Max PDOP       | 20.0    | The maximum PDOP value.  
A low PDOP value indicates that the visible satellites are widely separated in the sky, which gives better position information. When the PDOP value rises above the maximum value, the GNSS receiver stops logging GNSS positions.  
Specify a lower maximum PDOP to collect fewer, more precise positions. Specify a higher maximum PDOP to collect more, less precise positions. |
| Max HDOP       | 14.0    | The maximum HDOP value. This field does not appear if *Use Smart Settings* is selected. To set a maximum HDOP, use Custom mode. Specifying a maximum HDOP can give greater productivity than filtering the solutions with a maximum PDOP. Setting a maximum PDOP rejects some positions that have an acceptable HDOP value, because their VDOP value is unacceptable. When you use a maximum HDOP, these positions are accepted.  
Use a maximum HDOP value when vertical precision is not particularly important, and productivity would be decreased by excluding positions with a high vertical component in the PDOP value. Do this, for example, when collecting data under canopy.  
**Note** – To achieve the same precision horizontally as you would achieve with a given maximum PDOP, set this value to two-thirds of the maximum PDOP. |
Accuracy Settings form

Use the AccuracySettings form to specify the parameters shown on the Estimated Accuracy icon and how the GPScorrect extension calculates the estimated accuracy of the current GNSS position.

To open the Accuracy Settings form, tap the Setup button below the Accuracy Settings field on the GNSS Settings form (see page 86).

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min SNR</td>
<td>33</td>
<td>The minimum L1 SNR value. The SNR is a measure of the quality of the signal from a satellite. When the SNR of a satellite falls below the minimum value, the Trimble GPScorrect extension stops using that satellite to calculate the GNSS position.</td>
</tr>
<tr>
<td>Min Elevation</td>
<td>5°</td>
<td>The minimum elevation. Signals from satellites that have a low elevation from the horizon can be of poor quality. The GPScorrect extension does not use any satellite that is below the minimum value to calculate the GNSS position.</td>
</tr>
</tbody>
</table>

Table 4.24 Accuracy Settings form: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>
| Accuracy Value for Display/Logging | Horizontal; In the field | The parameters that the GPScorrect extension will use to determine the estimated accuracy of the current GNSS position. The value is displayed by the Estimated Accuracy icon on the status bar. Select two out of four available parameters. The options are:  
  • Horizontal Use the horizontal estimated accuracy of the current GNSS position.  
  • Vertical Use the vertical estimated accuracy of the current GNSS position.  
  • In the field Use the current estimated accuracy of the current GNSS position. The value calculated depends on several factors, including satellite geometry and the type of GNSS receiver that is connected.  
  • Postprocessed Use the predicted estimated accuracy of the current GNSS position, which is the estimated accuracy that is likely to be achieved after the field data has been postprocessed. |
Forms and Controls

Real-time Settings form

Use the Real-time Settings form to select the real-time differential correction sources that you use, if any, and to configure how your system communicates with each source.

To open the Real-time Settings form, do one of the following:

• In the Setup section, tap Real-time Settings.
• In any screen in the Real-time section, tap the Setup button.

For detailed information about valid combinations of real-time correction sources, and how to set up a real-time correction source, including a VRS network, see Setting up a real-time differential correction source, page 43.

Table 4.25 describes the fields in the Real-time Settings form:

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice 1 Use Uncorrected GNSS</td>
<td></td>
<td>Your preferred source of real-time corrections. The options are:</td>
</tr>
<tr>
<td>• External Source</td>
<td>Use an external correction source such as a VRS network, data radio, or GeoBeacon receiver.</td>
<td></td>
</tr>
<tr>
<td>• Integrated SBAS</td>
<td>Use corrections from an integrated SBAS receiver.</td>
<td></td>
</tr>
<tr>
<td>• Use Uncorrected GNSS</td>
<td>Log autonomous GNSS positions without applying real-time corrections.</td>
<td></td>
</tr>
</tbody>
</table>
Use the External Source Settings form to configure settings specific to an external real-time correction source, such as a GeoBeacon receiver or a VRS network.

**Tip** – You cannot use the settings in this form to change settings on the external beacon receiver. To change external beacon receiver settings, use the software that is supplied with the receiver.

To open the External Source Settings form, open the Real-time Settings form and in the Choice 1 field select External Source. Then tap the Setup button that appears beside the Choice 1 field.

**Note** – For step-by-step instructions for connecting to a VRS network using an Internet connection, see Connecting to a VRS network using an Internet connection, page 46.

### Table 4.26 External Source Settings form: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Single Base</td>
<td>The type of source. The options are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Single Base: Corrections are sent by a single base station.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VRS: Corrections are sent by a VRS network, which uses corrections from several base stations to compute corrections for your location.</td>
</tr>
<tr>
<td>Connection Method</td>
<td>Serial Port</td>
<td>How the GPScorrect extension connects to the external correction source. The options are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-time Age Limit</td>
<td>50 seconds</td>
<td>The maximum age at which a correction message will be used. The age of a message is the time that has elapsed since it was received. Select an option from the drop-down list.</td>
</tr>
</tbody>
</table>
### Table 4.26 External Source Settings form: Fields (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>(blank)</td>
<td>This field only appears if the Connection Method field is set to Internet. The IP address (for example, 255.255.255.255) or URL (for example, vrs.seaview.gov) of the server or NTRIP server that is supplying corrections from the VRS network. An NTRIP server manages authentication and password control for differential correction sources such as VRS networks, and relays corrections from the source that you select to the GNSS receiver.</td>
</tr>
<tr>
<td>Port</td>
<td>80 (Internet)</td>
<td>This field only appears if the Connection Method field is set to Internet. Specifies the port on the VRS network that the GNSS receiver is to connect to.</td>
</tr>
<tr>
<td>Modem Type</td>
<td>(blank)</td>
<td>This field only appears if the Connection Method field (on this form) is set to Direct Dial. The type of modem you are using to connect to the VRS network.</td>
</tr>
<tr>
<td>Phone Number</td>
<td>(blank)</td>
<td>This field only appears if the Connection Method field (on this form) is set to Direct Dial. The telephone number of the VRS network.</td>
</tr>
<tr>
<td>Source</td>
<td>Not Applicable</td>
<td>This field only appears if the Connection Method field (on this form) is set to Internet. If you are connecting to a VRS network through an NTRIP server, this read-only field shows the selected server. If you are connecting directly to a VRS network, or have not yet selected a VRS network, this field shows the text Not Applicable. To select a server, tap the Setup button beside the Source field. The GPScorrect extension attempts to establish a connection to the NTRIP server. If the connection is successful, the Select Server form (see page 92) appears. Select the server that you want to receive corrections from and then tap OK to return to the External Source Settings form.</td>
</tr>
<tr>
<td>User name</td>
<td>(blank)</td>
<td>This field only appears if the server you want to use requires authentication. Specifies the username that you use to log on to the server.</td>
</tr>
<tr>
<td>Password</td>
<td>(blank)</td>
<td>This field only appears if the server you want to use requires authentication. Specifies the password that you use to log on to the server.</td>
</tr>
<tr>
<td>Connection Control</td>
<td>Auto</td>
<td>Specifies how communication with the VRS network is controlled. The options are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Auto The GPScorrect extension automatically establishes a connection when it is needed, and reconnects if an existing connection is lost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Manual You must manually connect to the VRS network whenever you want to use real-time corrections from the network. To connect or disconnect, tap the Ext Source button in the main screen of the Setup section (see page 83).</td>
</tr>
</tbody>
</table>
Forms and Controls

Trimble GPScorrect Extension Getting Started Guide

Select Server form

Use the Select Server form to select the server that you want to receive VRS network corrections from.

To open the Select Server form, do one of the following in the External Source Settings form (see page 90):

- tap the Setup button beside the Source field
- change the value in the Address field or the Port field, and then move to another field

If the specified Internet address is an NTRIP server, the Select Server form appears, listing the servers that are available through the selected NTRIP server.

Tip – If you cannot find a server on the list, return to the External Source Settings form and make sure that the option that you require (VRS network or Single Base) is selected in the Type field.

The form contains a table of information about the available servers. You can drag each column heading to resize the column, or tap a column heading to sort by that column. If the list is already sorted by the column you tap, the sort order is reversed.

To select a server, highlight it in the list and then tap OK. You are returned to the External Source Settings form, where the selected server name is displayed in the Source field.

Table 4.27 Select Server form: Column

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>The identification code of the server.</td>
</tr>
<tr>
<td>Name</td>
<td>A description of the server.</td>
</tr>
<tr>
<td>Country</td>
<td>The three-letter code for the country where the server is located.</td>
</tr>
<tr>
<td>Carrier</td>
<td>Indicates whether the data stream includes carrier phase data.</td>
</tr>
<tr>
<td>Format</td>
<td>The format of the data stream, such as RTCM, raw data, or CMR.</td>
</tr>
<tr>
<td>Details</td>
<td>Details of the message format, such as the RTCM message types generated.</td>
</tr>
<tr>
<td>Network</td>
<td>The network or service provider.</td>
</tr>
</tbody>
</table>
Forms and Controls 4

Integrated SBAS Settings form

Use the Integrated SBAS Settings form to configure the SBAS satellite settings.

To open the Integrated SBAS Settings form, open the Real-time Settings form and from one of the Choice fields select Integrated SBAS. Then tap the Setup button that appears beside the Choice field.

Table 4.28  Integrated SBAS Settings form: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracking Mode</td>
<td>Specify the tracking mode. The options are:</td>
</tr>
<tr>
<td></td>
<td>• Auto</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• GAGAN</td>
</tr>
<tr>
<td></td>
<td>• Custom</td>
</tr>
</tbody>
</table>
About section

Use the About section to view information about the installed version of the Trimble GPScorrect extension.

To display the About section, tap the arrow on the Section button next to the status bar and from the drop-down list select *About*.

Table 4.28  Integrated SBAS Settings form: Fields (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>When you select the custom tracking option, select specific SBAS satellites and then select the following options:</td>
</tr>
<tr>
<td></td>
<td>• Disabled The satellite is disabled.</td>
</tr>
<tr>
<td></td>
<td>• Enabled, Heed Health The real-time information is only used if the signal is flagged as healthy.</td>
</tr>
<tr>
<td></td>
<td>• Enabled, Override Health The real-time information is used irrespective of the health flag in the signal. An unhealthy signal will still be tracked and used.</td>
</tr>
</tbody>
</table>

Table 4.29  About section: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version number</td>
<td>The version and edition of the Trimble GPScorrect extension that is installed.</td>
</tr>
<tr>
<td>Installation code</td>
<td>The installation code for this installation of the Trimble GPScorrect extension. This is the installation code you entered during installation.</td>
</tr>
<tr>
<td>Software Expiry Date</td>
<td>The date until which you are entitled to telephone support, email support, and upgrades to later versions of the Trimble GPScorrect extension.</td>
</tr>
<tr>
<td>Copyright</td>
<td>Copyright information.</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>Acknowledgements for the parts of the Trimble GPScorrect extension that were developed by other companies.</td>
</tr>
</tbody>
</table>
Troubleshooting

In this chapter:

- GNSS
- Real-time differential correction
- GNSS position accuracy
- GPScorrect SSF file location
- GPScorrect SSF file naming

This chapter lists possible causes of, and solutions to, problems you may encounter when using the Trimble GPScorrect extension.
This table describes possible causes of problems with GNSS signals or your GNSS receiver.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The message No GNSS detected appears.</td>
<td>ArcPad is configured to connect to the wrong COM port.</td>
<td>Check that the COM port specified in the GNSS tab of the ArcPad Options dialog is the COM port that the GNSS receiver is connected to.</td>
</tr>
<tr>
<td></td>
<td>ArcPad is configured to use the wrong GNSS protocol.</td>
<td>In the Protocol tab of the ArcPad Options dialog, select the Trimble GPScorrect option from the Protocol field.</td>
</tr>
<tr>
<td></td>
<td>The GNSS receiver battery is dead, or is connected incorrectly.</td>
<td>Check that the battery is correctly connected and is charged, or connect to an external power source.</td>
</tr>
<tr>
<td></td>
<td>The cable connecting the field computer to the GNSS receiver is not connected, is connected incorrectly, or is faulty.</td>
<td>Check that the cable is connected correctly. If it appears to be correct and all other equipment appears to be correct, the cable may require servicing.</td>
</tr>
<tr>
<td></td>
<td>The COM port on the field computer is faulty.</td>
<td>Check that the COM port is undamaged. If it appears to be damaged, the field computer may require servicing.</td>
</tr>
<tr>
<td>The receiver has not acquired a satellite within three minutes of the GPScorrect extension starting.</td>
<td>The receiver is still looking for satellites.</td>
<td>Use the Satellite Info section to check how many satellites the GNSS receiver is tracking.</td>
</tr>
<tr>
<td></td>
<td>The satellites are being obstructed.</td>
<td>The obstruction may be a building, a tree, or a large vehicle. Identify the obstruction and move away from it.</td>
</tr>
<tr>
<td></td>
<td>Note – GNSS does not work indoors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Your GNSS receiver’s external antenna (or antenna cable) is not connected, is connected incorrectly, or is faulty.</td>
<td>Check that the external antenna is connected correctly. If your receiver still fails to acquire signals from a satellite, then your antenna and/or antenna cable may require servicing.</td>
</tr>
<tr>
<td></td>
<td>The receiver has not been used for a very long time, and the almanac stored in the receiver is outdated.</td>
<td>Wait for up to 15 minutes until a new almanac has been recorded. Subsequent restarts should then be rapid.</td>
</tr>
<tr>
<td></td>
<td>The receiver has been set to Base mode by another application.</td>
<td>Reset the GNSS receiver.</td>
</tr>
</tbody>
</table>
### Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The receiver cannot compute a GNSS position within one minute of the GPScorrect extension starting.</td>
<td>Too few satellites are available. Four satellites (SVs) are required to compute a position.</td>
<td>Use mission planning to check that sufficient satellites are visible. In the GNSS Settings form, check that the minimum elevation value is not too high, or select Use Smart Settings. In the GNSS Settings form, check that the minimum SNR value is not too high, or select Use Smart Settings.</td>
</tr>
<tr>
<td>The current DOP value is too high.</td>
<td></td>
<td>Use the Plan section to check for times when the PDOP or HDOP value is below your configured maximum value. In the GNSS Settings form, check that the configured maximum PDOP or HDOP value is not too low. To increase productivity, enter a larger number in the Max PDOP or Max HDOP field, or select Use Smart Settings.</td>
</tr>
<tr>
<td>Not all positions are corrected in real time.</td>
<td>The GPScorrect extension is configured to log uncorrected GNSS positions if real-time corrections are not available.</td>
<td>In the Real-time Settings form, change the selection in the last Choice field from Use uncorrected GNSS to Wait for real-time. When the Wait for real-time choice is selected, and all real-time sources are unavailable, the GPScorrect extension suspends GNSS logging until real-time corrections are available again.</td>
</tr>
<tr>
<td>The GPScorrect extension is not using your first choice real-time correction source.</td>
<td>Your first choice correction source is not available, so your second or third choice is being used.</td>
<td>In the Real-time Summary screen, check the status of your preferred correction source. Change the configuration in the Real-time Settings form if necessary, or wait until this source is available again. In the Real-time Settings form, select your preferred real-time correction source from the Choice 1 field.</td>
</tr>
<tr>
<td>Your real-time differential correction link does not appear to work.</td>
<td>Your telemetry link is incorrectly installed, powered, cabled, or configured.</td>
<td>Install the telemetry link as specified by the supplier. Consult the supplier if necessary. In the External Source Settings form, check that the Station ID field is set correctly.</td>
</tr>
<tr>
<td></td>
<td>You set the station ID incorrectly.</td>
<td>In the External Source Settings form, check that the Station ID field is set correctly.</td>
</tr>
<tr>
<td></td>
<td>You configured the real-time correction settings incorrectly.</td>
<td>In the External Source Settings form, check that the settings match the telemetry link and the transmitted RTCM data stream.</td>
</tr>
</tbody>
</table>

### Real-time differential correction

This table describes possible causes of problems with receiving real-time differential corrections or with real-time correction sources.

<table>
<thead>
<tr>
<th>Problem</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Not all positions are corrected in real time.</td>
<td>The GPScorrect extension is configured to log uncorrected GNSS positions if real-time corrections are not available.</td>
<td>In the Real-time Settings form, change the selection in the last Choice field from Use uncorrected GNSS to Wait for real-time. When the Wait for real-time choice is selected, and all real-time sources are unavailable, the GPScorrect extension suspends GNSS logging until real-time corrections are available again.</td>
</tr>
<tr>
<td>The GPScorrect extension is not using your first choice real-time correction source.</td>
<td>Your first choice correction source is not available, so your second or third choice is being used.</td>
<td>In the Real-time Summary screen, check the status of your preferred correction source. Change the configuration in the Real-time Settings form if necessary, or wait until this source is available again. In the Real-time Settings form, select your preferred real-time correction source from the Choice 1 field.</td>
</tr>
<tr>
<td>Your real-time differential correction link does not appear to work.</td>
<td>Your telemetry link is incorrectly installed, powered, cabled, or configured.</td>
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<td></td>
<td>You configured the real-time correction settings incorrectly.</td>
<td>In the External Source Settings form, check that the settings match the telemetry link and the transmitted RTCM data stream.</td>
</tr>
</tbody>
</table>
## GNSS position accuracy

This table describes possible causes of problems with the accuracy of GNSS positions.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The accuracy of recorded GNSS positions is not as good as you expect.</td>
<td>You did not record sufficient positions to achieve the required accuracy.</td>
<td>In ArcPad, make sure you collect enough positions to achieve the required accuracy before closing each feature.</td>
</tr>
<tr>
<td></td>
<td>Your maximum DOP value was too high. If you record positions when the Dilution of Precision is high, this has a detrimental effect on the accuracy of these positions.</td>
<td>In the GNSS Settings form, enter a smaller value in the Max PDOP or Max HDOP field, to make sure that the Trimble GPScorrect extension logs more accurate positions. Or, select Use Smart Settings.</td>
</tr>
<tr>
<td></td>
<td>Your minimum SNR or elevation value was too low. If you let the receiver use satellites with a low SNR or elevation, this may decrease the accuracy of positions calculated by the receiver.</td>
<td>In the GNSS Settings form, enter a larger value in the Min SNR and/or Min Elevation field, so that the receiver uses satellites with a strong signal. Or, select Use Smart Settings.</td>
</tr>
<tr>
<td></td>
<td>You are operating in an area of high multipath interference.</td>
<td>Move to an area with better GNSS coverage and use offsets.</td>
</tr>
<tr>
<td></td>
<td>No configured real-time source is available, so the Trimble GPScorrect extension is using uncorrected positions.</td>
<td>In the last Choice field in the Real-time Settings form, select Wait for real-time to use differentially corrected positions only.</td>
</tr>
<tr>
<td>You cannot differentially correct your GNSS positions (either in real time or in postprocessing).</td>
<td>The GPScorrect extension used satellites that were not visible to the GNSS base station.</td>
<td>Make sure the minimum elevation value in GPScorrect extension is high enough that the software only uses satellites that are also visible to the GNSS base station, or select Use Smart Settings. Try correcting your data using another base station file.</td>
</tr>
</tbody>
</table>
**GPScorrect SSF file location**

The GPScorrect extension determines the location of the SSF file using the following rules:

- When you open an existing map document, or save a map document, the SSF file location is set to the location of the open map document. However, the SSF file is not created or opened until you add or edit features using GNSS.

- If the current map document is new and unsaved, then the SSF file is stored in the same folder as the AXF file or the first edited Shapefile in the map (this is the Shapefile containing the first feature that you create or update using GNSS).

- If there is already an SSF file with the same name in the required location, new GNSS data is appended to this existing file. However, to ensure that GNSS positions can be postprocessed, the GPScorrect extension does not append data to a file that is more than seven days old. Instead, the existing file is renamed with an underscore and a number added, and a new SSF file of the required name is created. For example, if the file named GPScorrect.ssf is more than seven days old, the file is renamed GPScorrect_1.ssf, and a new file called GPScorrect.ssf is created.

- Once the SSF file location has been determined, it does not change unless the map document changes. For example, if you open a new map, add an existing AXF file or Shapefile, and then add a feature to the file, the SSF file is created in the same folder as the AXF file or Shapefile. If you then save the map to a different folder, the SSF file is not moved or duplicated; it remains in the same folder as the AXF file or Shapefile.

**GPScorrect SSF file naming**

When you log GNSS data using the Trimble GPScorrect extension, the data is stored in an SSF file. The name of the SSF file depends whether you are using Shapefiles or AXF files.

The SSF file will be named GPScorrect.SSF if you are using:

- a map file, whether the map file contains Shapefiles or AXF files, or a combination of both files.

- Shapefiles.

- a combination of Shapefiles and AXF files, if both of these filetypes were added to the map before starting GNSS logging.

The SSF file will have the same name as the AXF file name if you:

- add an AXF file or AXF layer to an empty map.

- open an AXF file, start GNSS logging and then open additional Shapefiles.

In the GPS Pathfinder Office software, the ShapeCorrect Utility supports SSF files named according to either convention. If you are using a combination of Shapefiles and AXF files, you must run the ShapeCorrect Utility once for each file type.
The Trimble GPS Analyst extension for Esri ArcGIS Desktop software also supports SSF files associated with either Shapefiles or AXF files. To check in data collected using ArcPad and the Trimble GSCorrect extension, check in Shapefiles and AXF files (with their associated SSF files) separately using the relevant check in tool for each file type. For more information, refer to the Trimble GPS Analyst Extension Update for ArcPad 7.1 Software Support Release Notes.