

GNSS Control Panel

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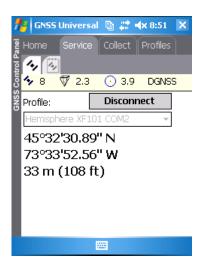
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Chapter 1

1 Introducing the GNSS Control Panel



The **GNSS Control Panel** enables the use of a wide range of professional GNSS receivers for applications requiring the level of precision permitted by GNSS post-processing with **EZSurv**®.

The GNSS Control Panel can be used as a standalone data collector or as a GNSS driver platform for applications such as the GNSS Driver for ArcPad.

Application software developers can build GNSS applications on top of the **GNSS Control Panel** SDK, available separately.

The **GNSS Control Panel** work on Windows computers as well as on Windows Mobile devices.

This guide describes how to use GNSS Control Panel.

1.1 Overview

The **GNSS Control Panel** provides the foundation applications and technologies to enable GNSS data collection compatible with **EZSurv**®.

This includes:

- The GNSS Universal Driver, a powerful GNSS driver that supports a wide range of GNSS receiver protocols for use with the EZSurv® post-processing software;
- The **GNSS Control Panel**, an easy-to-use application for configuring the connection to you GNSS receiver and for performing simple GNSS data collection tasks;
- The GNSS Control Panel SDK, a software development kit available separately (contact OnPOZ Sales for details).

GNSS Universal Driver

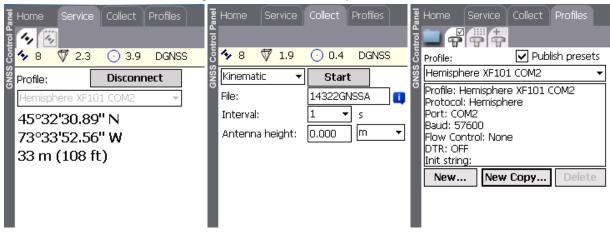
The GNSS Universal Driver is the proven technology that drives EZTag CE™ since 1995. It is now available as a standalone engine, distributed as part of the GNSS Control Panel.

See the GNSS Control Panel Release Notes for the list of supported GNSS protocols and receivers.

All drivers are compatible with the **EZSurv®** post-processing software.

GNSS Control Panel

The **GNSS Control Panel** provides the user interface to connect to your GNSS receiver, to perform some simple data collection tasks, and to configure the GNSS receiver profiles.



GNSS Control Panel SDK

The **GNSS Control Panel SDK** allows application software developers to create new GNSS applications on top of the **GNSS Universal Driver**. For instance OnPOZ offers such an application called the **GNSS Driver for ArcPad**. Please contact OnPOZ Sales for more information about the SDK.

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Chapter 2

2 Connecting to the GNSS Receiver

This chapter introduces the basics about connecting to your GNSS receiver and monitoring status information. This is useful if you plan to collect data using the **GNSS Control Panel**.

A Note to ArcPad Users

If you plan to use the **GNSS Driver for ArcPad** as your data collector then please refer to the **GNSS Driver for ArcPad User Guide** for details about how to connect to your GNSS receiver under ArcPad. We recommend that you read this chapter anyway, as it contains useful information.

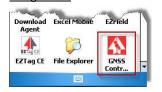
2.1 Starting the GNSS Control Panel

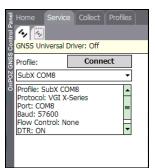
This section shows how to start the GNSS Control Panel and how to recognize possible states of the GNSS Universal Driver.

Start menu:

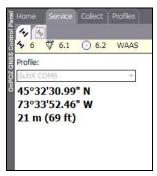


Programs:









To start GNSS Control Panel on Windows:

• Select OnPOZ > GNSS Control Panel from the Windows Start menu.

To start GNSS Control Panel on Windows Mobile:

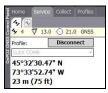
 Click Programs under the Start menu, then click then select the GNSS Control Panel icon:



A click on the GNSS Control Panel Status Icon opens the GNSS Control Panel application.

If the GNSS Universal Driver is not currently started, the status bar will indicate GNSS Universal Driver: Off, the Connect button will be displayed and the Profile list box will be enabled.

If the GNSS Universal Driver is currently running and was started by the GNSS Control Panel, then the Disconnect button will be displayed. The status bar will either show GNSS Universal Driver Connecting... or the satellite status information:



If the GNSS Universal Driver is currently running but was started by an application other than the GNSS Control Panel (such as the GNSS Driver for ArcPad), then no button will be displayed.

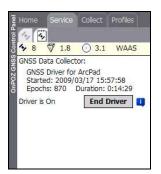
This means that the **GNSS Universal Driver** session is currently owned by that other application. See the next section about session ownership.

2.2 Viewing the Driver Current Owner and Clients

The **GNSS Universal Driver** runs as a background process that may be shared among multiple applications. The first application to start the driver takes ownership of the driver. This means that it has access to all the capabilities of the driver, including recording of the GNSS data files used for post-processing (**GPS**, **OBS** and **ORB**).

Other applications do not own the driver session, yet they have access to the GNSS position and status information. However they cannot record the GNSS data files for post-processing.

Here is how to view which application is the owner.



Click the **Service** tab. Click the **Advanced** tab:



The name of the owner application, if there is one, will be displayed under **GNSS Data Collector**. This means that this application is allowed to record GNSS data for post-processing.

Any other client(s) not owning the session will be listed under a list labeled **Additional clients**.



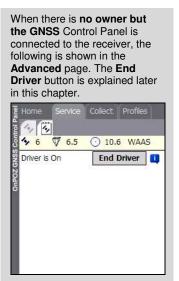
Select the **Collect** tab.

Note that while another application (such as **GNSS Driver for ArcPad**) is owner, the **Collect** tab will not allow you to collect data until the owner application is stopped.



When the driver is not in use, the **GNSS Data Collector** field will not be shown.

This means that you are free to start the **GNSS Universal Driver** using the **Connect** button on the first page of the **Service** tab, as described in the next section.

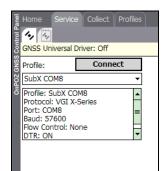


2.3 Connecting to the GNSS Receiver

Once you have selected the appropriate GNSS receiver profile you are ready to connect to your GNSS receiver.

Note to ArcPad Users

Refer to the *GNSS Driver for ArcPad User Guide* for connecting to the GNSS receiver in ArcPad. The procedure described here applies only to connecting using the **GNSS Control Panel**.



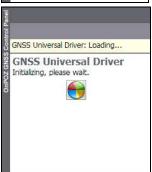
Click the **Service** tab. Click the first tab:



Select the appropriate GNSS receiver profile from the list.

Power on your GNSS receiver.

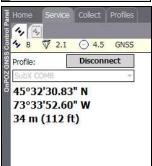
Click the Connect button.



This starts the **GNSS Universal Driver**, which goes into the **Loading...** state, followed by **Listening...**

After a few seconds the status bar will indicate GNSS Universal Driver: Connecting...



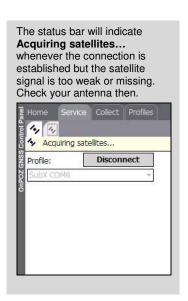


Once the **GNSS Universal Driver** is receiving at least 4 satellites, the status bar will display the satellites information and the current GNSS position will be shown.

TROUBLESHOOTING TIPS

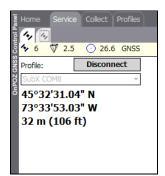
If the status remains **GNSS Universal Driver: Connecting...** for too long, then try these:

- Make sure the GNSS receiver is powered on and correctly connected (Bluetooth, USB or serial) to the computer.
- Make sure that you are using an appropriate profile. For instance, are you using the proper protocol and baud rate?
- Make sure that the antenna is attached to your GNSS receiver and has a clear view of the sky. Wait a few minutes for your receiver to compute a position fix.



2.4 Disconnecting from the GNSS Receiver

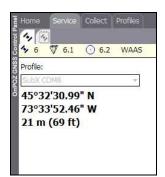
You can stop the GNSS Universal Driver from the GNSS Control Panel.



Click the **Disconnect** button to terminate the connection with the GNSS receiver.

Note that if you have started a data collection using the **Collect** tab, you will not be able to disconnect, and the following message will be displayed when you click **Disconnect**:





If the **GNSS Universal Driver** was started by another application, the **Connect** button will not show.

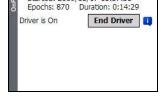
In this case you can use the **Advanced** tab to view which application owns the driver, and then close that application in order to stop the driver.



If you cannot stop the **GNSS Universal Driver** using the above methods, then you can use the **End Driver** button to force the driver to stop.

IMPORTANT: Use this option only if there is no other way to cleanly stop the driver.





♥ 1.8 ⊙ 3.1 WAAS

1/2

GNSS Data Collector:

GNSS Driver for ArcPad Started: 2009/03/17 15:57:58

2.5 Using the Status Bar to Monitor the GNSS Status

The status bar provides a quick summary of the status of the GNSS satellites. The status bar is available under the **Service** and **Connect** tabs

GNSS Universal Driver: Off

When the **GNSS Universal Driver** is not running, the text **GNSS Universal Driver**: **Off** is displayed in the status bar.

GNSS Universal Driver: Connecting...

When the **GNSS Universal Driver** is running but is not connected or is not yet ready, the text **GNSS Universal Driver: Connecting...** is displayed in the status bar.

Acquiring satellites...

When the **GNSS Universal Driver** is ready but is yet not receiving GNSS positions from the receiver, the text **Acquiring satellites...** is displayed in the status bar.

♦ 8
▼ 2.1
○ 4.5 GNSS

When the **GNSS Universal Driver** is running and receiving GNSS positions, the status bar indicates the status of the GNSS satellites.



The first indicator displays the number of satellites used to compute the GNSS position.



The second indicator displays the position dilution of precision (PDOP). The lower the value, the more precise the position shall be.



The third indicator displays the estimated 2D error in meters.

GNSS

The last indicator displays the type of GNSS solution used to compute the latest position. See sidebar for details.

TROUBLESHOOTING TIPS

If the status remains GNSS Universal Driver: Connecting... for too long, then try these:

- Make sure the GNSS receiver is powered on and correctly connected (Bluetooth, USB or serial) to the mobile computer.
- Make sure that you are using an appropriate profile. For instance, are you using the proper protocol and baud rate?
- Make sure that the antenna is attached to your GNSS receiver and has a clear view of the sky. Wait a few minutes for your receiver to compute a position fix.

If your receiver supports both GPS and GLONASS, the satellites count will include the sum of GPS and GLONASS satellites used.

The solutions will be one of the following:

GNSS – simple GNSS solution;

SBAS – solution aided with SBAS corrections:

DGNSS – solution aided with differential GNSS corrections.

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Chapter 3

3 Collecting GNSS Data for Post-Processing

This chapter explains how to collect kinematic, base and static data using the **GNSS Control Panel** and shows how to post-process the collected data with **EZSurv**®.

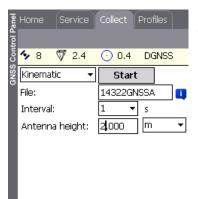
A Note to ArcPad Users

Users of the **GNSS Driver for ArcPad** may skip this chapter, unless also interested in collecting GNSS data using the **GNSS Control Panel**. ArcPad users should read the **GNSS Driver for ArcPad User Guide**.

3.1 Collecting Kinematic GNSS Data

You can use the **GNSS Control Panel** to collect kinematic data as you walk in the field. The collected data is ready to be post-processed with **EZSurv**®.

Start the **GNSS Universal Driver** and make sure that you are receiving signal before you start the data collection. See chapter 2 for details about starting the driver.



Select the **Collect** tab and select **Kinematic** from the list.

- Use the File field to edit the default file name if needed.
- Select a data collection interval from the Interval list:
- Use the Antenna height field to enter the antenna height. The combo after the edit box lets you choose the unit for antenna height.

Click Start to start the data collection.

The **Stop** button is displayed and the fields are graved-out while data is being collected.

Click **Stop** to terminate the data collection and to close the collected data files.

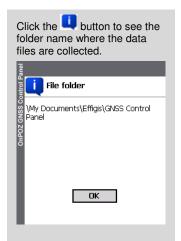
Click **Yes** to confirm or **No** to continue with the data collection.



09026GNSSA.gps 09026GNSSA.obs 09026GNSSA.orb 09026GNSSA.pos Once you have stopped the data collection, you will find the collected GNSS files (GPS, OBS, ORB and POS) in your personal documents folder, under Effigis\GNSS Control Panel. Click to see the exact folder name.

See the sidebars for sample folders on Windows Mobile and Windows.

A kinematic data collection will contain all the GNSS observations (and real-time computed positions) collected on the field.



Windows Mobile:

\My Documents\Effigis\GNSS Control Panel

Windows XP (example):

C:\Documents and Settings*MyUser*\My Documents\Effigis\GNSS Control Panel

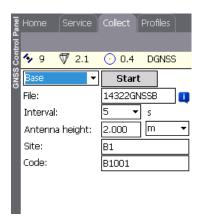
Windows Vista, Windows 7, Windows 8, Windows 8.1 and Windows 10 (example):

C:\Users\MyUser\Documents\
Effigis\GNSS Control Panel

3.2 Collecting Base and Static GNSS Data

You can use the **GNSS Control Panel** to collect base and static data as the GNSS antenna stands still on the field. The collected base and static data is ready to be post-processed with **EZSurv**®.

Start the **GNSS Universal Driver** and make sure that you are receiving signal before you start the data collection. See chapter 2 for details about starting the driver



Select the **Collect** tab and select **Base** or **Static** from the list.

- Use the File field to edit the default file name if needed.
- Select a data collection interval from the Interval list;
- Use the Antenna height field to enter the antenna height. The combo after the edit box lets you choose the unit for antenna height.
- Use the Site (mandatory) and Code (optional) fields to enter the site and code information for your base or static project.

Click Start to start the data collection.

IMPORTANT: Secure the antenna in stable position before starting the project. **The antenna must not move** during the collection of a base or static project.



The **Stop** button is displayed and the fields are grayed-out while data is being collected.

Click **Stop** to terminate the data collection and to close the collected data files.

Click **Yes** to confirm or **No** to continue with the data collection.



Once you have stopped the data collection, you will find the collected GNSS files (GPS, OBS and ORB) in your personal documents folder, under Effigis\GNSS Control Panel. Click to see the exact folder name.

See the sidebars for sample folders on Windows Mobile and Windows.

Use **Base** to collect a reference base for post-processing static and kinematic projects. **EZSurv®** will ask for the coordinates of the base.

Use **Static** to survey a static location on the field.



Windows Mobile:

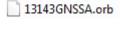
\My Documents\Effigis\GNSS Control Panel

Windows XP (example):

C:\Documents and Settings\MyUser\My Documents\Effigis\GNSS Control Panel

Windows Vista, Windows 7, Windows 8, Windows 8.1 and Windows 10 (example):

C:\Users\MyUser\Documents\E ffigis\GNSS Control Panel



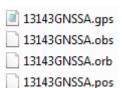
13143GNSSA.gps

13143GNSSA.obs

3.3 Post-processing GNSS Data with EZSurv®

Transfer the GNSS data from the field and use EZSurv® to post-process the data.

IMPORTANT: We strongly recommend you read the **EZSurv® User Guide** for an in-depth description of GNSS post-processing with **EZSurv®**.



You can use **Mobile File Manager** in **OnPOZ Tools** to transfer your GNSS data to the computer running **EZSurv**®. Or you can copy manually the **GPS**, **OBS**, **ORB** and **POS** files from your mobile computer to the computer running **EZSurv**®.

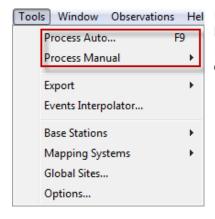
The **POS** file is present only for Kinematic projects.



Drag and drop the GPS file to the EZSurv® Observations folder to open the GPS file.

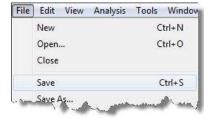


For base projects you will be asked to enter the coordinates of the base.



Use Tools > Process Auto... or Tools > Process Manual to post-process the GNSS data. Please refer to the EZSurv® documentation for details.





Select **File > Save** to save the post-processed project.

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Chapter 4

4 Creating and Editing GNSS Receiver Profiles

This chapter explains how to create and edit GNSS receiver profiles that contain all the parameters needed to connect to your GNSS receiver. The **GNSS Control Panel** come with a number of preset profiles, but you can create your own if the profile you need is not part of the presets.

About GNSS Receiver Profiles

A GNSS receiver profile contains the following parameters needed to connect to your GNSS receiver:

- Protocol. This may be any vendor-specific GNSS protocol supported by the GNSS Universal Driver;
- Connection parameters: port number, baud rate, flow control and DTR.

A profile also contains additional parameters that are seldom needed, and reserved for advanced uses:

- Initialization string. This is useful in order to perform custom initializations of the GNSS receiver. In
 most cases this is not needed because the GNSS Universal Driver properly initializes the GNSS
 receivers for the most useful scenarios. You must know the details about the protocol of your receiver in
 order to set the initialization string.
- **Advanced parameters**. Some advanced parameters can be configured where the standard parameters will not do. The most useful advanced parameters are documented in this guide.

Preset Profiles

The **GNSS Control Panel** includes a number of preset profiles that you can use but that you cannot edit. In many cases the presets will do the job and you will not have to create nor edit your own profiles. There is at least one preset for each supported protocol.

User Profiles

If there is no preset profile containing the parameters needed for your GNSS receiver, you can create a new user profile or edit a copy of one of the presets as a new user profile. This is useful for instance when you need to select a specific COM port for using your receiver over Bluetooth.

User Guide

■ The XGDP Files

All profiles are saved in files with the XGDP extension under your computer's application folder. The exact location on Windows XP, Windows Vista, Windows 7, Windows 8, Windows 8.1 or Windows 10 may vary, but it corresponds to the **Effigis\GNSS Profiles** folder under the application data folder for the current user. Typical folders will be as follows:

- Windows Mobile: \Application Data\Effigis\GNSS Profiles;
- Windows XP: C:\Documents and Settings\MyUser\Application Data\Effigis\GNSS Profiles;
- Windows Vista, Windows 7, Windows 8, Windows 8.1 or Windows 10:
 C:\Users\MyUser\AppData\Roaming\Effigis\GNSS Profiles;

IMPORTANT: Do not edit the XGDP files manually.

The **protocols.xgdp** and **presets.xgdp** are distributed and updated by the **GNSS Control Panel** installation program. They are never modified by the **GNSS Control Panel**.

The **user.xgdp** file initially contains no profiles. It is modified by the **GNSS Control Panel**. You should include the **user.xgdp** file as part of your backups.

4.1 Creating a New User Profile

If you cannot find a preset profile that fits your need you can create a new user profile.



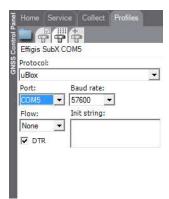
Select the **Profiles** tab, then select the profile selection page:



Click New...

Enter the name for the new profile and click **OK**.





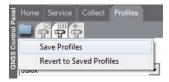
This opens the profile edition page.



Select the parameters for this profile:

- Protocol: select one of the available GNSS protocols from the list;
- Port: select the communication port from the list;
- Baud: select the baud rate from the list;
- Flow: select a flow control option from the list;
- **DTR**: enable or disable the DTR.

Baud rates are restricted to what is supported by the **GNSS Universal Driver** for the selected protocol.



Click the folder icon:



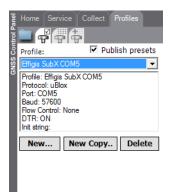
Select **Save Profiles** from the menu to save the changes to the profiles.

REMARK

If needed, you can use the **Revert to Saved Profiles** menu to undo all changes and thus revert to the last saved version of the profiles.

4.2 Editing an Existing User Profile

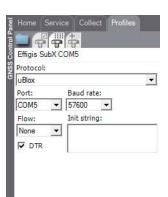
This section shows how to edit an existing user profile.



Select the **Profiles** tab, then select the profile selection page:



Select the user profile to edit from the list.



Select the profile edition page.



Edit the parameters.

REMARK

If you have selected a preset profile, then you will not be able to edit its parameters. Preset profiles cannot be edited.



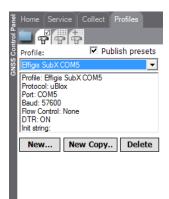
Click the folder icon:



Select **Save Profiles** to save your changes, or **Revert to Save Profiles** to undo the changes.

4.3 Creating a New User Profile from a Copy of an Existing Profile

You can create a new profile by using an existing user or preset profile as a model. This is useful for instance when you want to make multiple copies of a profile to account for various possible Bluetooth or USB ports.



Select the **Profiles** tab, then select the profile selection page:

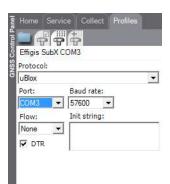


Select a profile from which you want to create a new copy.

Click New Copy...

Enter the name for the new profile and click **OK**.





Edit the parameters and save.

4.4 Deleting a User Profile

You can delete a user profile if you do not need it anymore.



Select the **Profiles** tab, then select the profile selection page:



Select the profile to delete.

Click Delete.

REMARK

The **Delete** button is enabled only if the selected profile is a user profile. You cannot delete a preset profile.



Click Yes to confirm the deletion and then save.

4.5 Publishing User Profiles Only

By default, both the user and the preset profiles are published for selection by end-user when he chooses a profile for connection with his GNSS receiver.

Since most users need only a limited set of profiles, you can restrict the publication of the profiles strictly to the user profiles. This way the preset profiles will be hidden.

For instance if you are using only SubX receivers, create user profiles for those receivers then hide the preset profiles. This way the end-user will not see the other brands of receivers.

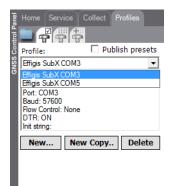


Select the **Profiles** tab, then select the profile selection page:



Uncheck the **Publish presets** box to publish only your user profiles.

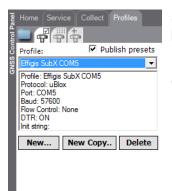
You can check the **Publish presets** box if you want to publish both the presets and the user profiles.



With **Publish presets** unchecked, the **Service** tab will show only the user profiles.

4.6 Creating a Playback Profile

This section shows how to use the advanced page to create a special GNSS profile that reads the GNSS data from a playback file, instead of from a GNSS receiver. This is useful for demo and training purposes. The playback file can be collected using the **GNSS Driver for ArcPad** or any other application capable of collecting playback files.

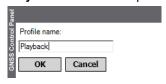


Select the **Profiles** tab, then select the profile selection page:

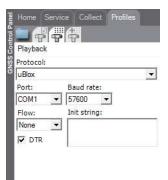


Click New...

Enter the name Playback for the new profile.

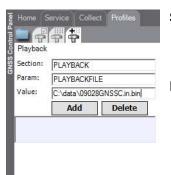


Click OK.



Select the protocol that matches your playback file.

Note: All the other parameters (**Port**, **Baud rate**, **Flow**, **Init string** and **DTR**) will be ignored when using playback.



Select the advanced page:



Enter the following information:

- Section: PLAYBACK
- Param: PLAYBACKFILE
- Value: enter the full name of the playback file. For instance: C:\data\09028GNSSC.in.bin

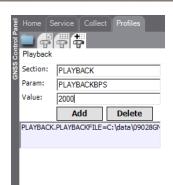
Click Add.

The **PLAYBACKFILE** parameter in the **PLAYBACK**

section specifies the name of the playback file to use.

The **PLAYBACKBPS** parameter in the **PLAYBACK** section specifies the playback rate in bytes per second.

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Enter the following information:

Section: PLAYBACKParam: PLAYBACKBPS

Value: 2000

Click Add.



This adds advanded parameters to the profile, and lists the parameters at the bottom of the page.

Save the profile.

4.7 Copying Profiles to your Mobile Computers

If you are using more than one mobile computer you may find it useful to edit and test the profiles once, then copy the same profiles to all mobile computers.

presets.xgdp
protocols.xgdp
user.xgdp

All the profiles and protocols are saved in.XGDP files named **protocols.xgdp**, **presets.xgdp** and **user.xgdp**. These files are located in the GNSS Profiles folder (see sidebar).

Copy all three files to all the GNSS Profiles folder of the target mobile computers.

IMPORTANT: Copy all three files. Otherwise you may end-up with a **user.xgdp** which is out of sync with **presets.xgdp** and **protocols.xgdp**.

IMPORTANT: Never modify the **presets.xgdp** and **protocols.xgdp** files.

It is not recommended to modify the **user.xgdp** file manually: use the **GNSS Control Panel** to edit the user profiles.

The GNSS Profile Folder

The exact location on Windows XP, Windows Vista, Windows 7, Windows 8, Windows 8.1 and Windows 10 may vary, but they correspond to the **Effigis\GNSS Profiles** folder under the application data folder for the current user. Typical folders will be as follows:

Windows Mobile:

\Application Data\Effigis\GNSS Profiles

Windows XP:

C:\Documents and Settings\MyUser\Application Data\Effigis\GNSS Profiles

Windows Vista, Windows 7, Windows 8, Windows 8.1 and Windows 10:

C:\Users\MyUser\AppData\ Roaming\Effigis\GNSS Profiles

