GPS Secrets

t's fun to uncover something that you aren't supposed to know about — many software applications and movies on DVD contain what are known as "easter eggs." However, imagine finding something that you aren't supposed to find that turns out to be useful and informative.

In this chapter, we are going to hunt for GPS easter eggs, delving into the secrets that lie behind the standard menus on your GPS unit to find useful features and diagnostic screens that can give you information about your system and troubleshoot problems that you might have.

There's a lot of information to find — technical information, diagnostic information, and more.

Let's begin our tour of the secrets of GPS units.

Hidden Secrets

Most electronic devices contain hidden diagnostic screens or setup menus that are used by the manufacturer to diagnose faults and possibly remedy them. GPS receivers are no different, but because of their limited number of buttons, numerous complicated keystrokes are often needed to access such menus so that users don't accidentally find them.

You are unlikely to get any tech support for any of the undocumented features of your GPS unit, and these screens offer plenty of opportunity to cause problems and mess up your unit. Take care and don't make any changes unless you are sure of what you are doing.

If you do make changes, take the following precautions:

- Make a note of the changes you are making that includes any new settings and their original values.
- Don't make too many changes at once. Better still, make one change at a time.
- If the unit appears worse after the change you made, undo the change immediately.
- If the unit doesn't allow you to reverse a change, you will have to reset the device (details are provided later in this chapter).

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- ☑ Performing hard and soft resets
- ✓ Accessing diagnostic screens

Garmin Secret Screens

In this section, I show you the secrets that are specific to GPS units from Garmin. Icover the older units, including the GPS III and III+, all the way up to the modern eTrex and Geko lines. I also include some specialized units, such as the Forerunner, which is designed to be worn on your wrist for hands-free outdoor activities, and the iQue, which is a combination GPS and Palm PDA.

Hard Resets

A *hard reset* wipes out all the data in your GPS and returns the unit to its initial factory settings. If you're having trouble with your unit and a soft reset doesn't help, a hard reset may be your only recourse.

Most of the hard reset sequences are complicated, to ensure that you don't press them by accident. Some of these key combinations require an extra hand, or another person, to assist you.

To confuse the issue further, different models of GPS use different terms for a hard reset. Several models call it a *master reset*, for example.

The iQue 3600 is an exception. In this case, a hard reset wipes out all data on the iQue, but leaves any GPS-related data present.

Here are the hard reset keys for the various Garmin products.

Model	Hard Reset Key
iQue 3600	RESET + POWER
Forerunner	RESET + POWER
StreetPilot	Hold down the MENU and FIND and PAGE buttons and switch the unit on using the POWER button.
Geko	Press down all the keys except the DOWN key and hold that for 5 seconds.
eTrex	For units that don't have the click-stick, hold the UP and ENTER keys and then press the POWER button.
	For click-stick units, hold the PAGE button down while at the same time holding the click-stick in the down position and powering up the unit.
GPS 60/60CS	Hold down ENTER and the PAGE buttons while powering up.
GPS 76/76C/76CS	Hold down ENTER and the PAGE buttons while powering up.
GPS 176	Simultaneously hold down the button, the NAV button and the QUIT button and then tap the POWER button. Make sure that you continue to hold all the buttons until the unit switches on.
еМар	Hold ESC while powering up the unit.

Model	Hard Reset Key
GPS 76S	Hold down the DOWN button while powering up.
GPS III and GPS III+	Press the MENU button while powering the unit up.
GPS V	Hold down the ZOOM OUT and QUIT buttons while powering up. (This only works with units that run version 2.20 of the firmware and earlier.)

Soft Resets

A *soft reset* is a way to erase all the data in your GPS's memory and restart the system. Any settings you've changed are kept, but any waypoints, routes, or other data is deleted. You might want to do this when you're having problems with your unit. A soft reset isn't as destructive to the settings as a hard reset, so if you're trying to fix your unit, you should try a soft reset first.

Only the Garmin iQue 3600 and Forerunner models have a soft reset feature. On the iQue, a soft reset deletes all the volatile memory, but any data saved in applications is retained.

Here are the soft reset keys for the Garmin products that have this feature.

Model	Soft Reset Key
iQue 3600	RESET
Forerunner	Switch the unit off. Then press and hold down MODE + ENTER while pressing and releasing POWER. The screen should turn light gray. Continue holding the MODE and ENTER button until the startup screen appears.

Warm Resets

The warm reset feature is unique to the iQue 3600. It's less dangerous than a soft reset, because it is the equivalent of booting a PC and reloading the applications. Memory management on handheld devices isn't as good as on a desktop PC, and periodic warm resets help to solve problems and speed up operation. This type of reset can be useful for solving operating system issues with the unit. To perform a warm reset on the iQue, press RESET and SCROLL UP.

Full GPS Resets

The full reset is another function unique to the iQue. This reset wipes out all GPS data on the unit, but only GPS data. The PDA data remains intact. To perform a full reset on the iQue, press the RESET, ESC, and DateBook keys simultaneously.

Diagnostic Screens

The diagnostic screens on many GPS units give you access to an array of information about the unit. The screens available vary depending on which unit you have, but most of them will tell you the version of the firmware you're running and the battery voltage. Some will also tell you the temperature of the unit.

Here are the keys to access the diagnostic screens for the various Garmin products.

Model	Access Diagnostic Screens
Forerunner	Hold down ENTER and switch the unit on.
StreetPilot	Hold down the MENU and FIND buttons and switch the unit on using the POWER button.
Geko	Press OK while powering the unit on.
eTrex	If your unit doesn't have the click-stick, hold the UP and PAGE keys and then press the POWER button.
	If you have the click-stick, hold it in the down position and then power up.
GPS 60/60CS	Hold ENTER while powering up the unit.
GPS 76/76C/76CS	Hold ENTER while powering up the unit.
GPS 176	Hold ENTER while powering up the unit. (This only works with a limited number of firmware versions.)
еМар	Hold ENTER while powering up the unit.
GPS 76S	Hold OK while powering up the unit.
GPS III and GPS III+	Power up the unit while holding down the ENTER key.

Garmin GPS III Test Screens

The Garmin GPS III and GPS III+ have a number of test screens that warrant special mention here. As mentioned in the earlier table, you enter this mode by powering up the unit while holding down the ENTER key.

The test screen is used by Garmin for final testing and calibration of the unit, so if at all possible, only enter this mode when you can avoid getting a signal for the GPS satellites. The best place to do this is indoors away from doors and windows. Check for satellite coverage before entering this mode and bear in mind that satellites are continuously moving, so no signal now is no guarantee of no signal later during the day or night.

If your unit does pick up a signal, it's not the end of the world and no permanent harm will be done. The worst that can happen is that you may experience a little longer lockup times, or you might have to perform a full cold start to get it running again. You might also experience continued longer lockup times for a while until the unit recalibrates itself under use or from being left in the open while on.



The Garmin GPS III has a removable antenna, and unplugging it is a good way to ensure that no GPS signal lock can be obtained.

The test screen may also appear of its own accord — this can occur automatically if the unit detects a failure during power up.

You can use this mode to verify certain operations of the unit. For example, pressing each key will cause the corresponding key in the display to darken. Defective buttons won't cause this to happen.

Pressing the ENTER key twice in a succession will cause a graphic pixel test to run. This can be used to highlight any bad pixels on the display. Pressing the ENTER key again will further test the display. Pressing the ENTER key one more time will return you to the main test screen.

Pressing the POWER/LAMP key will show up onscreen and actually cause the backlight to illuminate.

Autolocating

Most units make the autolocate function a default feature. he autolocate feature deletes previous satellite data (the almanac) and downloads new data. It can sometime be very handy to force the GPS to download the almanac and "rediscover" where it is in the world. Some devices, such as the Garmin iQue 3600 and Geko, have an autolocate function that's plainly accessible to the user. Others have the feature, but it's hidden. The following table describes the keystrokes you can use to force autolocate for units on which it's hidden.

Model	Force Autolocate Key
Forerunner	With the unit off, press and hold down the DOWN key while pressing and releasing the POWER key.
StreetPilot	Hold down the PAGE and FIND buttons and then switch the unit on using the POWER button.
еМар	Hold FIND while powering up the unit.
GPS III and GPS III+	Press and hold down the PAGE button while switching the unit on.

Magellan Secret Screens

Magellan is the other primary manufacturer of GPS units other than Garmin. Almost all GPS units come from one of these two manufacturers. The different types of Magellan units have very different hidden screens, so I discuss them in separate sections.

Magellan Meridian Series

One of the most popular ranges of Magellan GPS units is the Meridian. This handheld GPS receiver is bigger and heavier than the Garmin eTrex, but it has a larger, easier-to-read LCD screen.

There are two types of secret menu for the Meridian: boot time screens, which you activate when you switch on the unit, and a secret menu that you can access while the unit is already running.

Boot Time Screens

These are screens that are accessed by pressing key combinations when the unit is switched on.

Function	Keys	To Exit
Force Off mode. Causes the system to shut down.	GOTO + ESC + ENTER	
Put the unit into software upload mode.	GOTO + ESC + PWR	Force Off
Switch the LCD off.	NAV + GOTO + ESC + PWR	Force Off
Carry out a burn-in test on the unit.	NAV + ESC + PWR	Press ESC
Access the hidden menu.	NAV + GOTO + PWR	Either press the power off button or use Force Off
Start a test of the display.	NAV + ZOOM IN + PWR	Force Off
Carry out a serial port test.	NAV + ZOOM OUT + PWR	Force Off
Clear the unit's memory.	ENTER + MENU + PWR	Press ESC

Access Menu (System On)

To access the secret menu, switch the unit on and press the following keys in order:



Be very careful when using these menus, as making incorrect changes to the system can cause the device to become unusable.

- 1. Menu
- 2. Rocker pad right
- Rocker pad left
- 4. Rocker pad right
- 5. Rocker pad left

- **6.** Select the appropriate menu number (see the following table).
- **7.** Press the Enter button.

Menu Number	Function	Exit By
00	Displays the firmware version	ESC button
01	Lists satellites MENU b	
03	WAAS status. Allows you to turn WAAS support on/off.	ESC button
09	Degauss sensors (factory use)	ESC button
10	Switches the unit off	
20	Satellite data	MENU button
21	Sensor degauss. Also begins compass calibration on the Meridian Platinum.	ESC button
22	Clears the sensor calibration information	ESC button
24	Clears the barometer calibration information	ESC button
30	Clears the unit's memory	ESC button
32	Clears all memory information	ESC button
38	Language select	ESC button
71	Creates waypoints for testing purposes	ESC button
82	Compensation offset	ESC button
86	Basemap upload (only via SD memory card). Rename basemap file to basemap.img.	ESC button
88	Firmware upload (only via SD memory card). Rename firmware file to firmware.hex.	ESC button
92	Change map menu	ESC button
93	Convert basemap name	ESC button
95	Erase all map data	ESC button
98	Map upload	ESC button
99	Software upload mode	Force off



Menus 86 and 88 are only available on firmware versions 4.02 and later.

Magellan SporTrak

The SporTrak is another commonly seen GPS receiver. The following table provides some of the undocumented features of this unit.

Function	Keys	
Clear memory	MENU + PWR	
Burn-in test	ESC + PWR	
Serial port test	OUT + PWR	
Self test	IN + PWR	

WAAS Switch On/Off

If you want to deactivate (or later reactivate) WAAS you can do so by following these steps:

- 1. Menu
- 2. Rocker pad right
- 3. Rocker pad left
- 4. Rocker pad right
- **5.** Rocker pad left

A box containing "00" appears. Press the rocker pad up until you reach "03." Press ENTER to activate/deactivate WAAS. To exit, press the following:

- 1. ESC
- 2. ESC
- **3.** PWR (to power off the unit)



Not following these steps to exit out of the menu can cause the SporTrak to lock up.

Magellan 300/330

The Magellan 300 was probably one of the first GPS units to hit the mainstream GPS market — many were sold, and if you go to geocaching events you will see plenty still in use.

The following table describes a few undocumented features of these units.

Function	Keys
Display software version	Press the left rocker pad key while starting the unit.
Delete memory	Press the right rocker pad key while starting the unit.
Display/keypad tests	Press the GOTO key while starting the unit.
Switch light on without icon	Press the LIGHT key while starting the unit.

After a Hard or Soft Reset

If you are unfortunate enough to have to perform a full reset on your unit using one of the sequences I've detailed in this chapter, you will need to allow the unit to download a full almanac from the GPS satellites before you can resume normal use.

To do this, you first need to place the unit in a location where a good satellite lock can be achieved. This process can take anywhere from 5 to 10 minutes, and I recommend doing this outdoors in a spot with a clear view of the sky. I also suggest that you keep the unit stationary, oriented vertically (upright) if it contains a helix antenna and horizontally if it uses a patch antenna (consult the manual for more details); otherwise, the process can take a lot longer.

After the first lock, you will need another 10 to 15 minutes to get the almanac reloaded. There's usually no onscreen indication that the almanac has been downloaded, but you can usually find out if it has been loaded by checking the date and time on the unit — if it is correct, or if the unit has a good lock on the satellites and is displaying location coordinates, then the almanac has been retrieved.

If your unit is a WAAS (Wide Area Augmentation System)—capable receiver, you will also have to allow the unit to download the WAAS almanac too. This can take some time; and if you are in Europe, you need to place the unit in a location where it has a view of the near horizon. Without the WAAS almanac loaded, the GPS will still report GPS positional information.



Remember that the time will be shown as UTC time (or GMT) because your local time offset will have been lost in the reset.

Now you can reload all of your preferences into the unit, including data such as the following:

- Time zone information
- Daylight saving information
- Coordinate format
- Battery type

Finally, you will need to upload all your waypoints and saved routes to your unit, so it is important to keep a backup of your data.

Summary

This chapter provided you with a quick and easy introduction to the hidden features, menus, and diagnostic screens that are built in to many of the popular GPS receivers on the market.

I've not listed all of them here — that would take pages and some units are better documented than others. Try doing an Internet search using your favorite search engine, and keywords such as "undocumented" and your GPS brand and model to find out more.

In addition, if your GPS isn't listed here, try the key combinations for another receiver from the same manufacturer and you might get lucky. If you have a new, unlisted GPS, experiment with it and see what you find.