

[Secret Startup commands](#) for Garmin handhelds Secret Startup Commands for Garmin handhelds.

There are several undocumented commands available, primarily at startup, on Garmin handheld receivers. This article will attempt to document some of the features available.

I will try to document these in a universal way although details may differ depending on the unit you have. There are variations among models and among software releases within models. There is no attempt to provide 100% mapping to a particular model or release.

Instead I have used a "try it" approach. I have documented what you may see and you will need to verify exactly what you did see. You may wish to print this out and check mark the features that are applicable to your unit.

Note that these features are not documented by Garmin for a reason. They are generally for testing the device and are not intended for end users. The modes are not supported by Garmin and may cause you to lose data in your machines. Try this at your own risk!

One major feature that is revealed when using these undocumented test modes is that there is a thermometer inside your Garmin unit. The intent of this thermometer is to compensate the internal time-of-day clock for changes in temperature which will cause the internal crystal to drift. To a lesser extent it is also used to adjust the contrast of the display screen for temperature changes. It will not measure ambient temperature except when the unit is first turned on since the internal temperature is changed due to the heating effects of the electronics in the unit. The thermometer based correction works by building a table of correction values that are then applied to the internal clock. This is only used to obtain an initial fix since after the fix the satellite data is used to keep the clock accurate. Similarly while you have a fix the accurate clock can be used to update the temperature data in the table which means the unit will compensate for aging parts and even the complete loss of the table.

[Special key startup sequences](#)

The three keyboard keys on the right side of the unit have special significance if held down while powering on the unit. These keys are generally called [page](#), [mark](#), and [enter](#). On the GIII units the center key is call menu but for our purposes it behaves the same. On Street Pilots the equivalent keyboard names will have to be used. These are page, option, and enter. See below for etrex and emap startup sequences. Other Garmin units typically have some of these special modes as well although the key sequences may be different.

[Page](#) - Holding the page key down while powering up the unit will cause an immediate forced cold start. On the street pilot this is the only way to observe the software revision level. On the G-III this is reported to lose the temperature compensation data.

[Mark](#) - Holding the mark key down while powering up will totally reset unit.

You will lose all user supplied data and preferences. The machine will be set back to factory defaults. Be careful, there is no warning message. All data will be lost!

On some units this feature has been documented in the manual and will offer a warning message before erasing. However, some versions of software, even on these machines, do not offer the warning. Do not depend on the documentation here. Have everything of value backed up before trying this. The big plus of this feature is that this reset can fix problems with the unit that will avoid having to send it back to Garmin.

Note that setting back to factory defaults means everything. You will not only lose things that you can backup but also settings that you cannot. For example the user defined datum, the user defined grid, any preferences and datums that you have set up, any customization of any kind. The leap second data will be gone. The Garmin waypoint will reappear if you have erased it. You will not have any of the tuning that was performed to calibrate your unit at Garmin so expect poor initial lockup performance. You will need to have a clear view of the sky and re-collect a full almanac. This takes about 15 minutes.

Enter - Hold the enter key down while powering up the unit will cause a test mode screen to appear. This test screen is used at Garmin in final testing and calibration of the unit. Warning! Do not use this screen if your unit can get a lock onto satellites. It is possible that a real satellite may spoof the test mode into recalibrating the unit with the wrong data. No permanent damage will be done but you may experience a little longer lockup times or may even have to do a total cold start to get it running again. You may also experience continued longer lockup times for awhile while the unit re-calibrates itself under use. You can read this document for a discussion of this issue from Garmin. If your unit has a removeable antenna then unplugging the antenna is a good way to ensure that no lock can be obtained.

The test mode screen can appear automatically if the unit detects a failure during power up. You can use this mode to verify certain operations of the unit. For example hitting each key will cause the corresponding key in the display to darken. Hitting the enter key twice in a row (on some units it is the page key) will cause a graphic pixel test which could highlight any bad pixels in your display. Hitting the same key again will further test the display. Hitting the key one more time will return to the main test screen. One units that use the page key to perform this test you can use the quit key to perform the graphic test backwards. The power/lamp key will show both an indication and actually light the lamp.

Other displayed entries are specific to internal tests performed in final test but the temperature (in Celsius), the internal and external battery voltages,

and the gps time can be useful. On the G-III+ and 12Map this mode will also display the version number of the software which has been removed from the start up screen. On some units status of the power on diagnostics can be viewed here.

While not obvious to an observer the test mode also starts the interface to emit PVT solutions in Garmin mode on units that support PVT output. Once started, this mode will continue even after a power off until you change it in the interface section by selecting "none".

[Emap Startup modes](#)

Emap supports the same 3 startup modes as other Garmin handhelds but some of the keys are different. Holding enter while powering up enters the test mode as described above. The temperature display is only in celcius and no external voltage is shown. You can run the visual screen diagnostics by holding down the esc key and then tap it to walk through all the screens. Holding down the esc key while powering up will reset the entire unit and you will lose all of your waypoints, routes, and tracklogs. There is a warning screen for this startup mode. Holding down the Find key and powering up forces the autolocate mode. It also places a couple of numbers in the upper right corner of the screen but I don't know how to interpret these numbers.

[Etrex Startup modes](#)

The etrex also has secret modes for test purposes. Hold the "up" and "page" keys and then press the "on/off" button to enter this screen. It behaves similar to the test mode described above and shows some information that is useful to the user. Note that it has been reported that the ROM test may show a false failure on this screen since a factory tester is not attached. You can run the key tests by pressing each of the keys. You can use the page key to cycle through all of the display tests. The screen shows the status of the power on diagnostics plus internal battery voltage and external if present. A clock display shows seconds, the revision level of the software is shown, and a thermometer reading shows the internal temperature in degrees Celsius. Hold the "up" and "enter" keys and then press the "on/off" button to reset the entire machine. You will receive a warning prompt. You can avoid this message using the sequence "Page" plus "Enter" plus "Up" and then press the "on/off" button. Hold the keys down for 5 seconds to perform the reset. The newer etrex units with the "Click Stick" use different keys to accomplish these tasks but the idea is the same. Holding the click stick down and then powering up will enter the test screen while holding the "page" key down and the "click stick" down and then powering up will reset the unit. You will be prompted with an "are you sure?" message. On these units holding down the "find" button in addition to the others will avoid the are you sure message. Hold the buttons for 5 seconds to clear the unit. Note that the extra key sequence may be an even bigger master reset but this is not clear to me.

Diagnostic Mode

This may be the most useful of the secret modes available on some Garmin handhelds and for some users the hardest to access. Basically you start the Garmin normally by pressing the power button and while the opening screen is being display you must press each of the 4 arrow keys once in any order. If you

accomplish this feat you will be rewarded with a quick switch to the status screen without waiting for the rest of the time-out. You should notice a -- just under the satellite display to confirm your success. If it doesn't work then power down and try again. It takes a certain rhythm to be successful.

This

will not work on G-III or G-III+ units but most of the information is available

on these units in normal mode. On G-II and G-II+ units this method will only work if you have the unit set in portrait mode. The etrex and emap do not support this mode.

The beauty of this mode is that you can leave the unit in this mode while using

it. It adds a new Diagnostic menu item and more information in some of the displays.

The -- information on the status screen will be replaced with a HDOP setting

once you have a fix. (HDOP stands for Horizontal Dilution of Precision and is

a measure of the suitability of the geometry of available satellites to produce an accurate fix. Numbers below 2.0 mean that the fix is pretty good.)

This is one of the factors used to calculate the estimated position error (epe) that appears at the top of the page. The EPE number is proprietary to Garmin but the HDOP number should be similar to one obtained for any unit since it only depends on the satellite geometry.

Really old multiplex units may notice another difference on the status page. On some units the status bars are solid all of the time even when ephemeris data is not yet valid. On these units the hollow bars will appear only in Diagnostic mode. Unfortunately the new 12CX also has only solid bars and this

mode doesn't fix them.

The position page also has a new entry down near the clock. This is the current internal temperature in Fahrenheit degrees. On some units if you have

set your preferences to metric this will be displayed in Celcius.

Finally the menu page will have a new entry at the bottom. This "D" can be selected to enter the diagnostic page.

The diagnostic page content will vary depending on which unit you have but will

generally contain diagnostic pass/fail messages at the top of the screen, the elapsed time for the unit, internal software information, and finally battery voltage.

On some units the elapsed time counter can be reset by hitting the enter key providing an additional timer for the unit. On units that already have an elapsed time meter in the normal position page then the one here cannot be reset with the enter key.

On some units hitting the page key will provide information about the status

of the last several shutdowns.

Pressing quit will return you to the normal screens of the gps but realize the gps continues to work fine while you are looking at the diagnostic screen. If you hit goto or mark you will perform these functions.

It is worth mentioning a little about the elapsed time meter. Generally this is

expected to be the time since the last factory reset. However, it will be reset

by the power-on/mark key sequence described above and it may be reset by some software upgrades.

On some units the battery voltage includes both internal and external voltages.

The internal voltage is indicated in .03 volt increments and seems to have this

accuracy. The external voltage is indicated with the similar precision but does

not have this accuracy. The external voltage has the following decimal setting for each whole voltage setting: .14, .29, .43, .57, .72, .86, and .00.

[Other easter eggs](#)

On some units, mostly older multiplex units, you can redisplay the world globe that appeared on the opening screen. Change to the map page and then hit the power-off button but stop before holding it down long enough to power the unit down. The globe will appear and you can control the speed of its spinning using

the arrow keys.

The III+ can display some icons that are not available on the icon menu. These are usually found in a downloaded map. For example the geographic place names are not available except when shown on the map. However you can use a trick to get these icons into you own waypoints. Find an entry using one of these waypoints on the screen and then press enter to convert it to a waypoint. You can now edit the waypoint values and name to be whatever you wish. These new icons will probably not be preserved when saved on a pc and re-entered since the

pc program may not support them.

[Internal Diagnostic reports](#)

On the etrex models with the click stick you can reach an internal diagnostic message page which reports stack data and shutdown data. First change to the trip computer page and press the "zoom out" key, the "zoom in" key, and the "zoom out" key once again. This will turn on the diagnostic reports page.

Has anybody found any more?

[revision](#)

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added etrex 00/5/30

add emap 00/6/2

added III+ icon trick 00/7/5

added new etrex models 01/4/9

added 76 and alternate keys for etrex 01/12/22

Goto Working with Garmin TOC

Dale DePriest