Garmin 500WX

Installation & Operations Guide

Enhanced version of the standard FSX G500W model. Created by

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Available at www.kronzky.info/fs/500wx

Installation

1. Make sure FSX has been shut down.
2. Copy the file **KRON_fs9gps.cab** into your `\Gauges` folder
   (which is beneath the FSX installation directory).

Implementation

To use the new unit in an existing plane, the references to the old G500 unit will have to be modified.

FS Panel Studio:

Select the gauge file "**KRON_fs9gps.cab**", which contains the gauge "**gps_500wx**", and add it into your panel
(or replace an existing one).

Manual edit of panel configuration file:

Only instructions for replacing the standard 500W unit are provided.
Adding this gauge to a panel is more involved, and those instructions go beyond the scope of this readme,
but a good general overview is available here: http://www.isgsim.com/tut1/isg_tut1.htm

1. Locate the panel folder for the airplane to be edited.
   The file will be in `[FSX installation folder]\SimObjects\Airplanes\{name of plane}\panel`
   e.g. `C:\games\FSX\SimObjects\Airplanes\Lear45\panel`
2. Open the file `Panel.cfg` in a text editor (e.g. Notepad).
3. Replace each occurrence of "**fs9gps!gps_500**" with "**KRON_fs9gps!gps_500WX**".
4. Save the file.

Start GPS in full-screen mode:
To run the GPS in full-screen mode *by default*, use the gauge "**gps_500wxF**" instead, when editing your panel.

New Features

Once FSX has been restarted, and the edited plane loaded, the GPS unit should look identical to the regular model, and all the standard features will work as they did before.

To use the newly added features, follow the instructions in the respective section.

- [Full-screen mode](#)
- [Map panning](#)
- [Relative terrain mode](#)
- [Hideable map overlays](#)
- [Independent unit settings](#)
- Overlay colors have been adjusted to be closer to the real-life model
- Map terrain colors have been adjusted to be less glaring and more informative
- Some overlay elements have been slightly repositioned to increase the visible map area
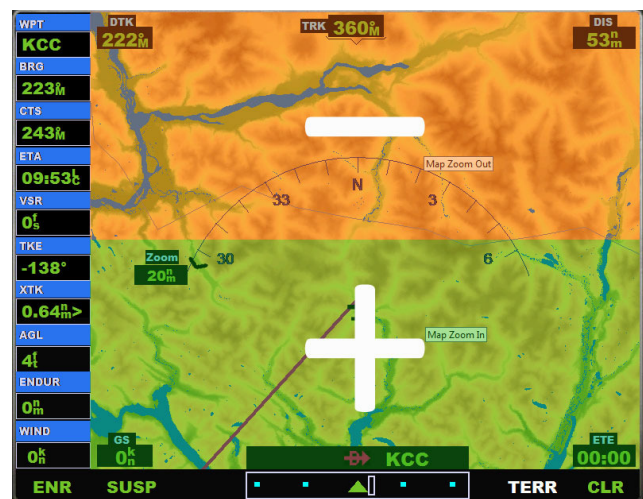
Full-screen mode
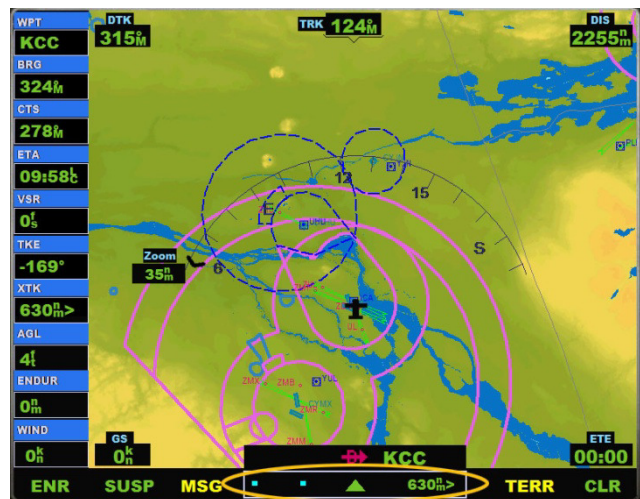
To switch between panel mode and full-screen mode, click the circled areas (right slot cover in panel mode & CDI box in full-screen mode).

Zooming

To change the zoom level, click on either
the top half of the map (to zoom out),
or the bottom part (to zoom in).
The interface follows the standard
of the regular RNG buttons:
Up = zoom out, down = zoom in

Navigation Modes

To change the navigation mode from "Track up" to "North up" (the equivalent of turning the small knob), click on the airplane icon in the center.
Clicking it once more will switch to pan mode (indicated by 4 panning arrows).

Bottom tags/keys

- **ENR –** Displays either "ENR", "TERM" or "APR", depending on current GPS sensitivity.
- **SUSP –** If automatic waypoint is turned off, tag will be colored yellow.
  To toggle waypoint sequencing, this can be used as a soft-key (i.e. clicking with the mouse).
- **MSG –** If messages are pending, this will flash yellow. If read messages are still available, this will be solid yellow. To open a pending message (or suppress further messages), click the tag.
- **TERR –** Cycles through the terrain modes.
  Green = no terrain, white = absolute terrain, yellow = relative terrain
- **CLR –** Cycles through filter modes.

Left Panel

Some additional info fields are available in full-screen mode:

- **AGL –** Altitude above ground. Shows the GPS-determined relative altitude, in relation to the ground below.
- **ENDUR –** Theoretical range of aircraft, based on the remaining fuel, the fuel flow rate and the current speed. The display can be toggled (by clicking on it) between showing the range in miles or in hours. To toggle waypoint sequencing, this can be used as a soft-key (i.e. clicking with the mouse).
  Since the range calculations are based only on the current situation, it is only meaningful once a steady flight elevation and speed has been reached (i.e. it will be very misleading during climbs and speed changes).
- **WIND –** Wind strength and direction at the current location.

In addition, in either mode (full-screen or windowed) the original "ETA" field now allows toggling between two modes:

- **ETA WP –** Same as in the original unit: Displays the estimated arrival at the next waypoint
- **ETA DEST –** If the flightplan has multiple waypoints, shows the ETA for the *final destination*.

Map Panning

While the aircraft is static (with the engines turned off), the map can be panned, independently from the aircraft's own position.

Panel mode panning

To turn panning on, click the **CRSR** button while in standard navigation mode.
The aircraft icon will disappear, and the map can now be moved with the cursor knobs.

Horizontal pan - Large knob: Turn left to pan left, turn right to pan right.
Vertical pan - Small knob: Turn left to pan down, turn right to pan up.


No panning   **Map panned up and right**

Full-screen panning

To switch to panning while in full-screen mode, click on the aircraft icon in the center until it switches to an arrows icon.

Clicking on any of the arrows will shift the map in the respective direction (aiming for the tips will avoid accidentally turning panning off).

To exit from panning mode, click the center of the arrow icon.
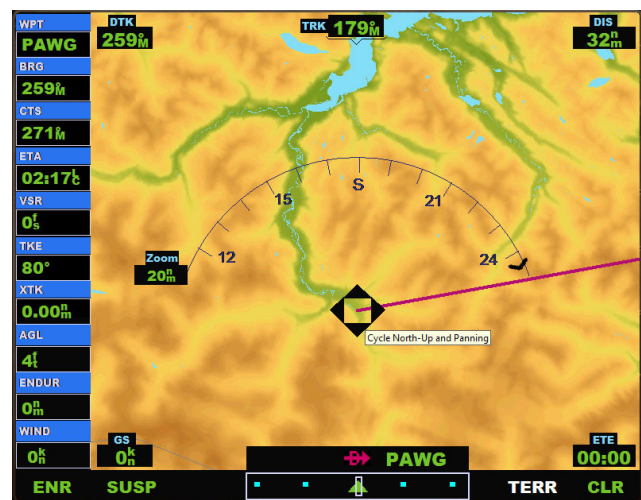
If, after exiting panning, the aircraft isn't centered, move it a bit in any direction, in order to re-synch the GPS.
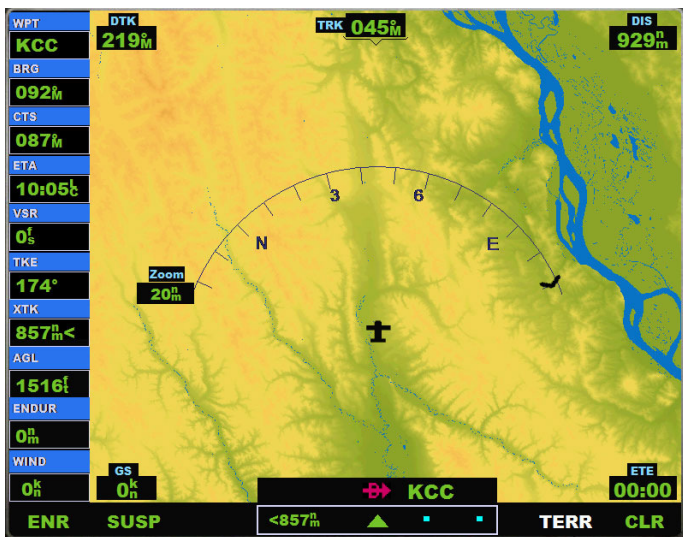
Terrain Mode

Instead of only toggling terrain mode on and off, as in the standard model, this unit cycles through three modes by pressing the TERR button (or the TERR tag, in full-screen mode).

**No Terrain:** The standard mode without terrain info. Landmass is black, water is blue.
In full-screen mode the TERR tag will be colored green.

Absolute Terrain: Shows terrain elevations in different colors (see appendix for color chart).
In full-screen mode the TERR tag will be colored white.

Relative Terrain: Shows terrain elevations in three different colors, relative to the plane's altitude (aircraft must be airborne). In full-screen mode the TERR tag will be colored yellow.
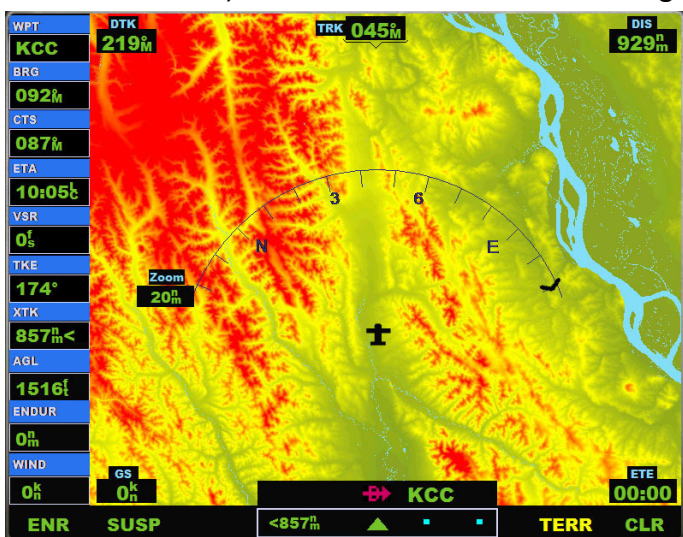
Green: Safe – At least 1,000 ft below the aircraft
Yellow: Warning – Between 1,000 ft and 100 ft below the aircraft.
Red: Danger – From 100 ft below, and anything higher than the aircraft.

As visible in the screenshot above, many shades of the three base colors are generated, to indicate the transitions between the thresholds. While the FSX engine can only define elevation colors in 1,000 ft steps, through these intermediate colors it is possible to get a better idea of close a certain terrain segment is.
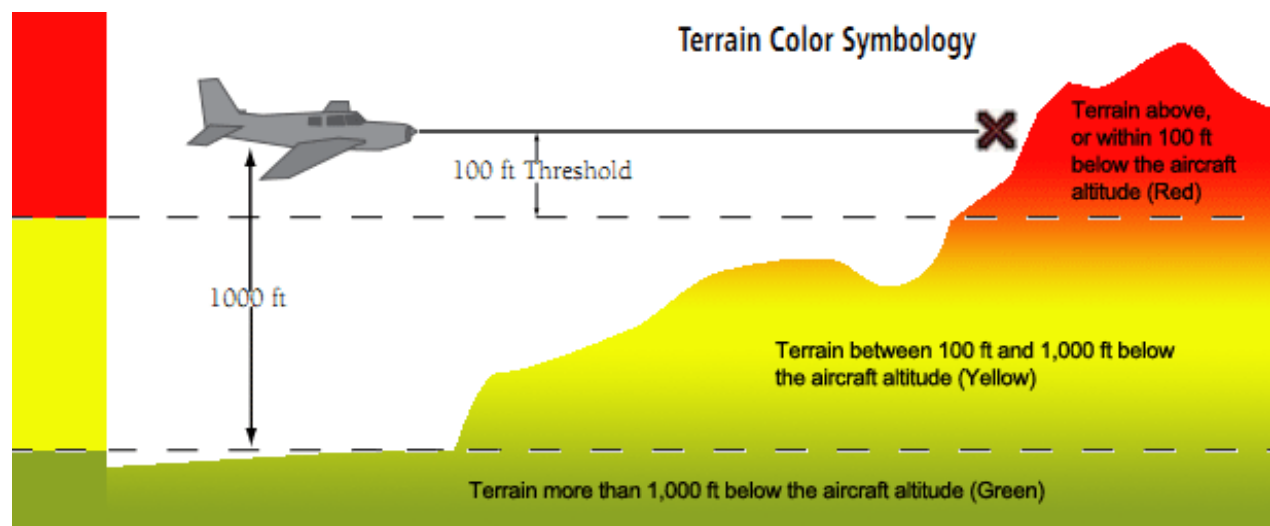
In general, everything green is absolutely safe.
The darker shades of yellow are normally ok as well, especially if the plane is on the higher end between flight levels (i.e. close to the next 1,000 ft level).
Yellows becoming lighter (merging with red), as well as Reds are dangerous, and should be avoided.

Relative terrain maps are only updated once every 1,000 ft (when crossing the x,900 mark, e.g. at 3,900 or 5,900 ft). When moving between these thresholds, the colors will stay the same, even though the relative heights are changing constantly.
This is due to FSX engine limitations, but is not really much of a utilization hindrance, due to the fact that intermediate colors are available, and if one tries to stay at full 1,000 ft flight levels, and away from yellow.

The best way of learning how to interpret the colors, though, is to fly across some hilly terrain, and observe the outside, as well as the map display, and very quickly it'll become second nature to correctly interpret the map.

Terrain Color Symbology

100 ft Threshold

1000 ft

Terrain above, or within 100 ft below the aircraft altitude (Red)

Terrain between 100 ft and 1,000 ft below the aircraft altitude (Yellow)

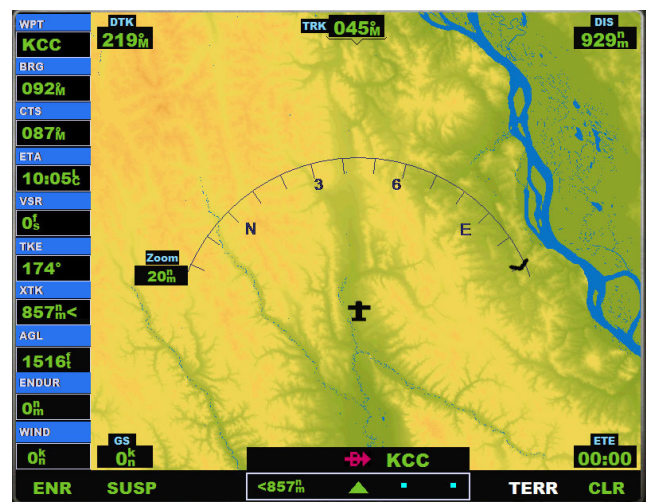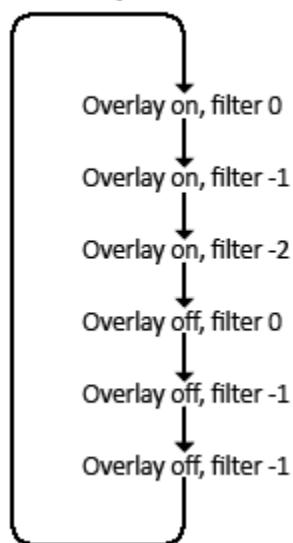Terrain more than 1,000 ft below the aircraft altitude (Green)

Map Overlays

Map overlays are considered the left panel (with the info-boxes for WPT, etc.) as well as the target information in the four corners of the map screen.

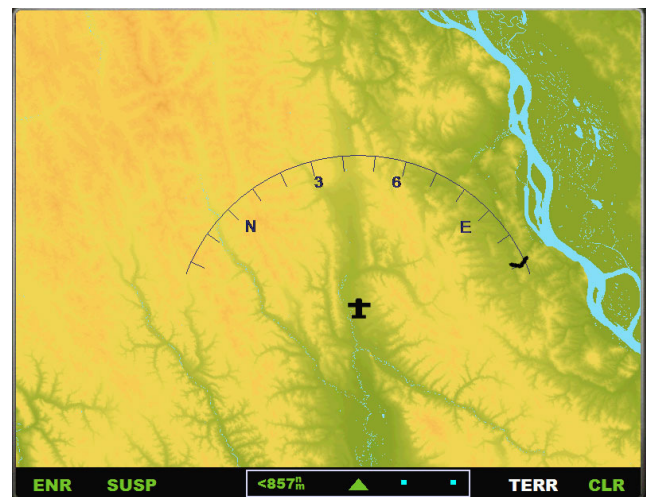These overlays can be toggled on and off by cycling through the different filter modes.

As in the standard 500W model, pressing the CLR button will cycle through three filter modes. With the 500WX model, once the last filter level has been reached, the visibility of the map overlay will be toggled. The cycling sequence is as follows:

CLR Cycle

Overlay on, filter 0

Overlay on, filter -1

Overlay on, filter -2

Overlay off, filter 0

Overlay off, filter -1

Overlay off, filter -1

Overlay on

Overlay off

Unit-Independent Settings

It is possible to install more than one GPS unit in an aircraft (e.g. one in the radio stack, and another one as a popup).

Any of the display-related settings (e.g. full-screen, terrain mode, etc.) are unit-specific, so it is possible to enter data on one screen, while still watching the surroundings on the other:

Technical Information

When positioning the unit, keep in mind that the original dimensions are 456 x 378 pixels.
While it is possible to stretch the unit, this will lead to distortions and misalignments (mainly in the bearing indicator).

Also, when resizing the unit to very small dimensions some of the sub/superscripted elements may not resize correctly (e.g. the unit specifiers in the overlays). If a very small size is needed, it is best to turn off the overlays altogether (as they will most likely be unreadable anyway).

The following local variables have been used by this addon.
If another addon should use the same variables, conflicts might occur.

- L:LastAltitude = Flight level at last map update
- L:TimeCheck = Incremental counter for delays in map updates
- L:PanHorz = Horizontal panning value
- L:PanVert = Vertical panning value
- L:ShowDebug = Whether to show debug info
- L:Debug1 = Debug value #1
- L:Debug2 = Debug value #2

For questions and problems, please contact kronzky@gmail.com

Elevation Color Chart

Elevation
0+
1000+
2000+
3000+
4000+
5000+
6000+
7000+
8000+
9000+
10000+
11000+
12000+
13000+
14000+
15000+
16000+