

Gauge: dsd\_gps.gau

This gauge provides gps navigation functionality while meeting two criteria that I felt were important – ease of use and minimal use of screen real estate. It uses great circle navigation, combined with the auto pilot heading hold function to get you from where you are, to the airport you have selected as a destination. It also provides some information about the destination airport. It does not make use of multi-leg flight plans. If detailed procedures are your thing, you will not like this gauge - I won't be upset if you delete it right now...

The gauge is perhaps a throwback to what we were using 10 years ago for navigation. I really liked David Drouin's GPS98!

#### Getting Started:

Use the four arrow buttons to select the ICAO of your destination airport. The right and left buttons will change the character position you are working with, while the up and down arrows will change the character values. The current character position will be displayed in cyan, rather than white, so you will be able to tell which character you are modifying.

As you scroll through the list of airports, the gauge will display some basic information about them:



Brg: Bearing, in degrees, relative to magnetic north.

Dist: Distance, in nautical miles, or kilometers, from your current position to the destination airport

GS: Ground speed, in knots. Adjusted for course deviation, so when you are off course, it will still provide you with a measure of how quickly the distance to the destination airport is decreasing.

Trk: The aircraft's current ground track, relative to magnetic north.

RelBrg: Bearing, in degrees, relative to the aircraft's ground track.

ETE: Estimated time on route, in minutes. This value will only be displayed if your ground speed is high enough for the calculation to be meaningful.

**ACT** button - used to activate GPS navigation. The gauge will turn on the autopilot, if required, and will set the heading hold value to the required course to the destination airport. A small red icon will be visible in the lower right hand corner of the display area when the gauge is controlling the auto pilot.

You will not be able to turn the heading hold function or the autopilot master off while the gauge is active. Click the ACT button to disengage the GPS, if required.

The gauge will automatically release the heading hold function when the distance to the airport is less than two nautical miles.

After two minutes of inactivity, the cyan highlighted letter will change back to white color. Clicking any arrow button, or the PAGE button, will reset the timer and cause the active letter to highlight again.

**PAGE** Button: To retrieve more information about the destination airport, click the page button. The next available screen, or page, will display basic geographic information about the airport – latitude, longitude, elevation and magnetic variation.



The next page provides communications and navigation information. The up and down arrows will allow you to scroll through lists of VOR's and NDB's near the airport (default radius is 20km), along with the list of COM frequencies available at the airport.



A number in parentheses, beside the navaid type indicates that more than one has been found. Use the left and right arrow buttons to scroll through each individual list (VOR, NDB, or COM).

For NDB's and VOR's the gauge will provide the distance and bearing, both from the airport, and from your aircraft. As with the airport itself on the first page, the bearing from the aircraft is a relative bearing from the aircraft heading.

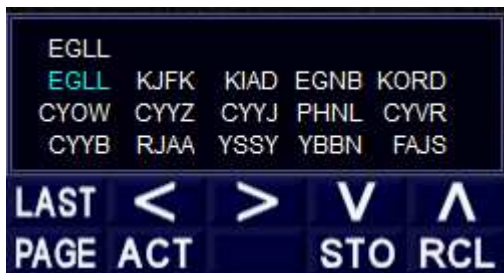
The last page of information available is the runway information page.



It provides dimensions and surface type for each runway, runway lighting, along with ILS information, if available. Again, a number in parentheses beside the “Runway” descriptor indicates that more than one entry is available. Use the left and right arrow buttons to scroll through the list of available runways.

Clicking the PAGE button from the Runway page will return you to the first page of the display.

**STO/RCL** – the gauge allows you to store up to 15 airport ICAO’s for easy access.



To save the currently selected airport, click the STO button save an airport ICAO. The top line on the display will show the currently selected airport. Below that will be the ICAO’s for up to 15 previously saved airports. Use the four arrow buttons to select the desired slot to save the current ICAO into. Click the STO button again to save the airport ICAO and return to the first page of the display.

To retrieve a previously saved ICAO, click the RCL button. The screen displayed will look identical to that displayed by the STO function. Use the four arrow buttons to highlight the desired airport ICAO and click the RCL button again to retrieve the ICAO into the GPS.

To exit either the STO or the RCL page without completing the store or recall function, simply click the PAGE button. You will be returned to the default opening page.

**LAST** button.

When the GPS is active, you are not precluded from exploring other airports. Use the method described above to select any airport to review its information. If you wish to return the display to that of the

airport you are flying towards, click the LAST button. This button will always retrieve the last airport ICAO selected for navigation.

## **Configuration File**

The gauge uses a configuration file to track saved information (LAST ICAO, and saved ICAO's.)

The file will have the same base name as the gauge, and will have the extension .ini. It will be located in the same folder as the gauge. This means that if you put the gauge in the panel folder of the aircraft you install it on, that is where the configuration file will be as well. This approach will result in each aircraft having its own list of saved ICAO's.

There are some other entries you can adjust, if you wish to (none of this is mandatory.)

### **DefaultICAO=**

This entry indicates the ICAO that will initially be loaded when the gauge is loaded by FS. This does not have to be a valid ICAO code. If you do most of your flying in some particular part of the world, you can enter the first one or two letters of an ICAO code only. For example, I do most of my flying in Canada, so I use the entry:

DefaultICAO=C

If you did all your flying in Germany, you could use:

DefaultICAO=ED

### **LastICAO=**

This is the value the LAST button will retrieve. The value is immediately written to the file when you click on the ACT button.

### **[Saved] section**

These are the ICAO codes saved using the STO button. Like everything else in the configuration file, they can be manually edited if you wish.

### **[UserWaypoints] section**

You can add values here to access particular geographic points of interest. If you enter an ICAO code composed entirely of numbers (0 through 9) the gauge will look through the entries in the user waypoints list for a corresponding entry. If it finds a matching entry, it will load the information specified and will then treat the point as a valid ICAO code. Information provided must include, at a minimum, a location name, its latitude and its longitude (both of these values in decimal degrees.) The values are separated by commas. You may additionally provide an elevation and a magnetic variation for the location. For example:

0000=SS Minnow, 22.1947165, -159.3319273, 10, 2

0001=Doug's place, 45.3796, -75.79445



From the second example, you can see that elevation and magvar are optional.

The digits 0 through 9 will allow for up to 10,000 combinations (0000 to 9999.) This does in fact mean that you can have up to 10,000 user specified waypoints in a configuration file. I can't really see anyone doing that, but it didn't make sense to put in an artificial limitation.

**Suggested panel.cfg syntax:**

```
//-----  
[Window02]  
Background_color=2,2,2  
size_mm=252,132  
window_size_ratio=1.000  
position=8  
visible=0  
ident=GPS_PANEL  
window_size= 0.197, 0.129  
window_pos= 0.010, 0.200  
gauge00=dsd_gps!gps, 1,1,250,130
```

My screen resolution is 1280x1024 - the window\_size values (0.197 and 0.129) are chosen to allow the gauge to display in its native size of 250x130.

If you wish to use the gauge as a supplement to, rather than a replacement for, the stock FS gps unit, you will need to use a window ident value other than GPS\_PANEL.

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