Telemetry Template for DJI (Adobe After Effects)

v 1.10

Important:

- You need to know Adobe After Effects well in order to use this template. You also need to have it installed in your system.
- This template works on Adobe After Effects 2020 and higher. The necessary SRT telemetry files are generated by some of DJI's drones: Mavic (Pro, 2 Pro, 2 Zoom, Mini, Mini 2), Phantom (3, 4, 4 Pro), Inspire Series, Matrice 200 and probably more. If your drone data does not work correctly, please get in touch
- Some of the graphs are very demanding with the processor. Make sure you have a powerful system. This has been tested on an i7 processor with 16 GB of RAM. It should work on older systems but it has not been thoroughly tested. Often, the first rendered frame is the slowest.
- You will need the Roboto and Roboto Mono fonts.

If you need the full template, get it here.

You can find a more general tutorial here.

Previous steps:

Enable the **Video Caption** feature within the Camera Settings of the DJI Go 4 app.

Phantom 4 Pro, Mavic Mini, Mini 2 and Inspire 2 include the subtitles in the mp4 files, instead of separate .SRTs. Use the Subtitle Extractor to convert them to **.SRT** first.

Convert the SRT files your drone will generate to **After Effects format** with the SRT Viewer.

You can tweak the the smoothness of the path until you achieve the desired look and reduce speed inaccuracies.
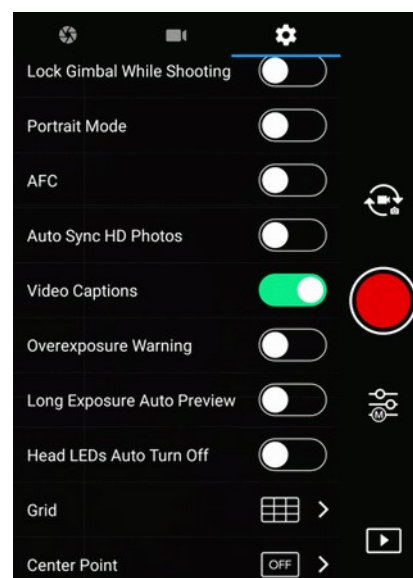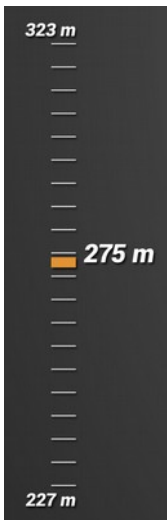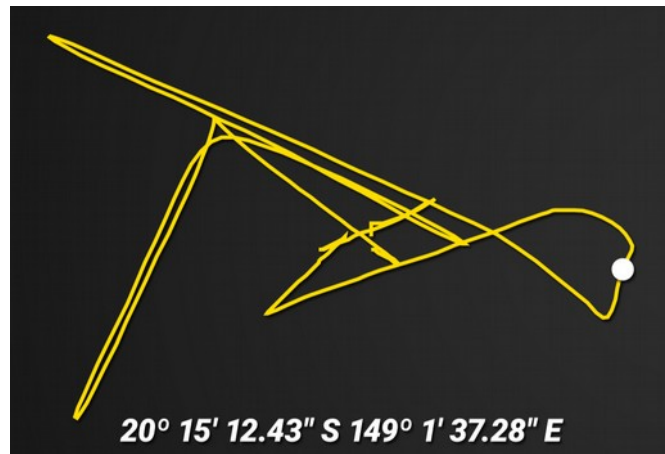
Gauges:

Speed: Shows velocity based on the GPS antenna data. As many other gauges, can be metric or imperial and colors, angles and sizes can be customized.

Distance: Shows current and total distance from the starting point, based on the GPS data.

Altitude: Shows the minimum, maximum and current altitude based on GPS information.

GPS Path: Draws a path with the GPS location data and the current position.

Altitude Path: Shows the altitude over time and the current altitude.

Speed Tracker: Shows velocity over time. Like the Speed gauge, it can be 2D (horizontal) or 3D speed (includes vertical) and units can be
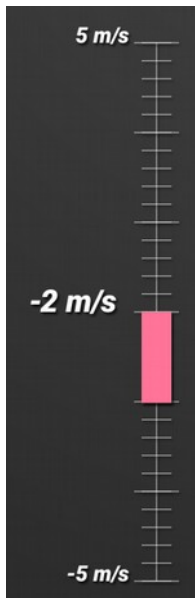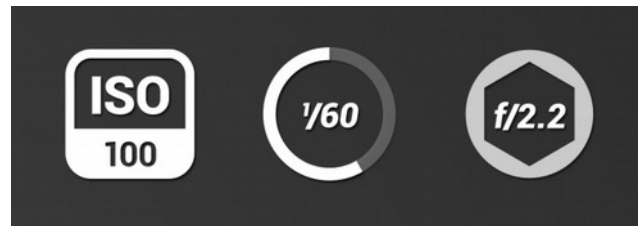
changed.

Course Direction: Points at the cardinal direction the device is moving to, not necessarily the direction it is looking at.

Camera Settings: ISO sensitivity, shutter speed and aperture (f-number) of every frame.

Vertical Speed: Shows the vertical speed of the path, or rate of ascent.

Time: Can either show the current date and time or become a stop watch (trim the mgJSON layer to set start and stop)
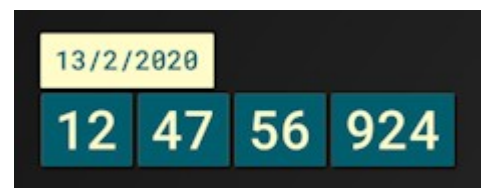
Instructions:

- Make a copy of the template for your project and keep the original as a backup.
- Hide the gauges you are not working with for better performance.
- Create a new composition based on your video.
- Drop the desired gauges on top of the video footage.
- Double click on each gauge composition and place your mgJSON file inside each wanted gauge composition, aligned to the start.

- Inside each gauge composition, use the effect controls of the Control layer to select your mgJSON file layer as the data source.
- Tweak other values as needed, but keep in mind that some graphs (GPS path, altitude path...) take a while to generate after any changes.
- Tweaking other parts of the templates has to be done carefully and only if you know what you are doing. Changing text size and hiding layers will be fine.
- If you want to rescale a gauge, the recommended way is by rescaling it in the MAIN composition. If scaling more than a 100% use the Collapse Transformations (little sun) option. You can also move or rescale each graph from inside its composition by transforming the Control layer.
- If you want to trim a graph to include only a portion of the data (for example a shorter GPS Path), trim the mgJSON layer and the content will adapt.
- Trimming will also improve performance.
- If you want to offset the timing of a gauge in relation to the video (for example to fix synchronization issues) move the whole composition. Moving the mgJSON layer will not have the result you expect.
- You can modify or delete keyframes in the data by right-clicking on the mgJSON layer and selecting Keyframe Assistant -> Create Keyframes from Data. Then open the desired data value and modify as you would in other After Effects layers.

Controls:

These are the available settings in the Control layers:

- **mgJSON Source**: Choose the layer that contains your data.
- **Imperial / American**: Metric vs imperial or american units.
- **Nautical**: Shows knots and nautical miles. Could override other units.
- **Large Units**: Choose miles over feet, kilometers over meters, and so on.
- **Ticks**: Number of tick marks in the graph.
- Text / Ticks / Gauge / Path / Position **Color**: Pick a color for the elements.
- **Width / Height**: Dimensions of the main element of the graph, in percentage.
- **Gauge** Width / Height: Dimensions of the main indicator element of the graph, can be pixels or percentage.
- **Tick** Width / Length: Thickness and length of tick marks.
- Tick / Position / Shutter **Size**: Sets the overall size of the element.
- **Text Distance**: Separation in pixels between the labels and the main element.
- **Margin**: Distance between the main element and the borders of the composition. Usually percentage.
- Bottom **Padding**: Inner margin between an elements border and its contents.

- **Decimal Places**: Figures to show after the period of a number.
- **Maximum** Speed: Sets the range of values the gauge can show properly.
- **Gauge Angle**: Sets the angle that the gauge will cover for the specified range.
- **3D Speed**: Whether to use 2D or 3D speed.
- **Base Angle**: The starting angle of the entire visualization.
- Needle / Tick **Distance**: Distance from the element to the needle.
- **Needle** Width / Length: Dimensions of the needle.
- Shutter **Border**: Thickness of the element border.
- **Path Thickness**: Thickness of drawn path.
- **Max Path Complexity**: This allows to simplify paths in order to get faster renders. Lower values render faster, higher values are more accurate. After Effects version 15 (2018) cannot handle more than a 1000.
- **Zero Based Altitude**: Subtracts the lowest altitude so that the range goes from zero to the total elevation difference.
- **Orientation**: Adapts the orientation of the gauge while keeping the text straight.
- **Frame Rate**: Base frame rate to base some aspect of the gauge on.
- **Max Aperture**: Minimum F-number to base the visualization on.
- **Fix Arrow**: Keep the arrow straight and rotate the rest of the gauge.
- **Hide Coordinates**: Don't show the coordinates text.
- **Set** min / max: Manually override the default or automated value.
- Min / max: Minimum and maximum values of the gauge.
- **Large Tick Every**: Include a larger tick for reference every N normal ticks. 0 for none.
- **Value Tick**: Include an additional tick to highlight where in the graph a value is being mesured.
- **Path Completion**: Show the portion of the path that has been completed. You might want to increase the Memory Points to show a more fluid progress, but that will increase render times.
- **Remaining Path**: Outline the remaining portion of the path.
- **Offset**: Add the specified amount to the desired property.
- **Stopwatch**: Show time starting from 0 instead of the recorded time. Trim the mgJSON layer to set the start and stop points.
- **Show**: Whether to display an element or not.
- **Roundness**: Style the border of an element.
- **Line Break**: Separates values in multiple lines.

Performance

The template can be slow to render, depending on the amount of gauges you add and their settings. Here are some tips to improve render times.

— Disable "motion blur" (See AE instructions)

— Disable "collapse transformations" (See AE instructions)

— Enable CUDA graphics acceleration if available (See AE instructions)

— Maximize the amount of RAM AE can use (See AE instructions)

— In gauges that have a smoothing control, set smoothing to a low value

— Set the work area of each gauge to the section you want to render, especially for gauges that have paths (GPS Path, Altitude Path...)

— In gauges that have controls like Time Window, Update Rate, Memory Points and Max Path Complexity, set those values to low numbers, as long as the gauge still looks good

— If possible, have your raw footage in an SSD hard drive and render to a different one

Note: You might receive a warning like "The structure of the data file for the layer has changed". This is expected in some After Effects versions and you should not worry about it.

If you encounter any bugs or need assistance, please contact app@prototyping.barcelona

To stay up to date with the latest in telemetry news, discounts, tutorials and tips, both for GoPro and DJI devices, subscribe here.