



Electronic engineering for MOTORSPORT APPLICATIONS

Misura la tua passione... migliora le tue performance.

DANAS PRO

Tutorial

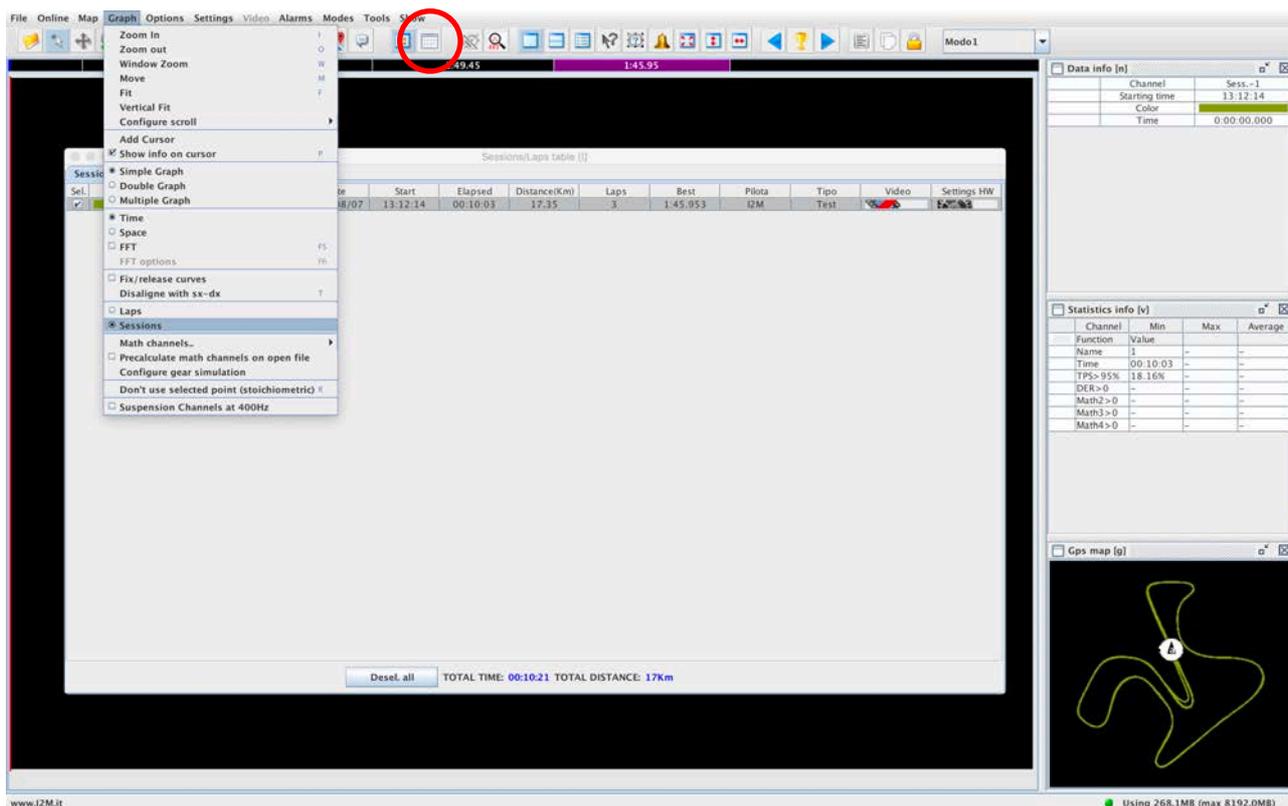
Channels visualization



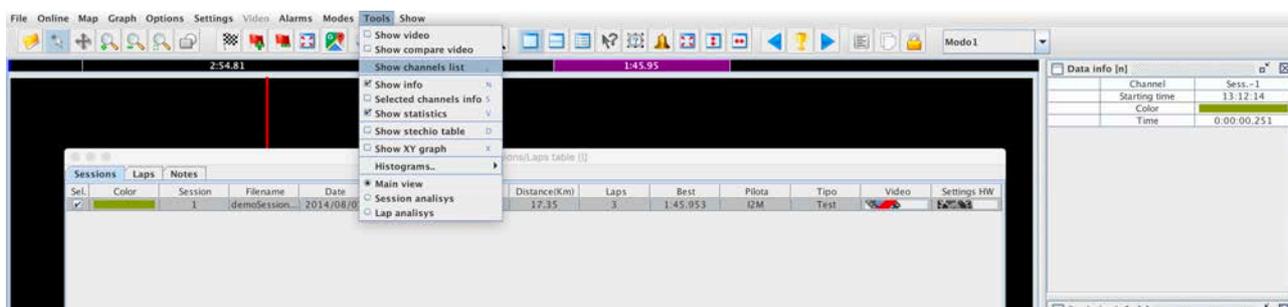
Version 1.0

In the first tutorial we learned how to open one or more sessions in Danas Pro. On the main graph, however, there was no graph because we had not yet indicated to the system which channels, we want to display.

In this second tutorial we are therefore concerned with visualizing the graph of the channels acquired. To do this we will still use the demo session opened in the first tutorial and we will still work in "sessions" mode leaving the "laps" mode to the next tutorial. First of all, check that you are in session mode by checking that the lap / session button is not pressed (button circled in red in the image) or alternatively by checking the mode in the graphic menu (the same is also present in the map menu).



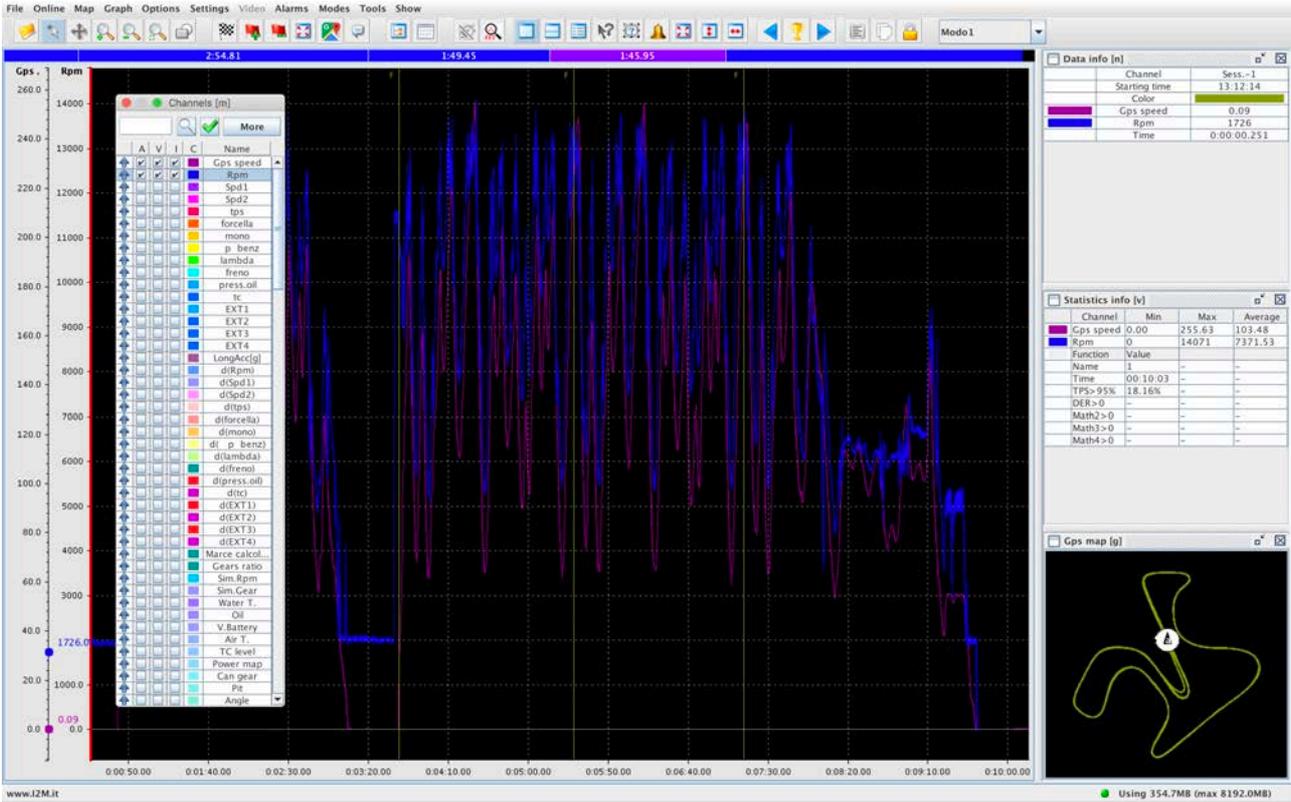
The next step is therefore to display the window that allows us to choose the channels to display. You can bring up this window using the appropriate button on the icon bar (highlighted in red in the previous image) or using the appropriate function in the Tools menu.



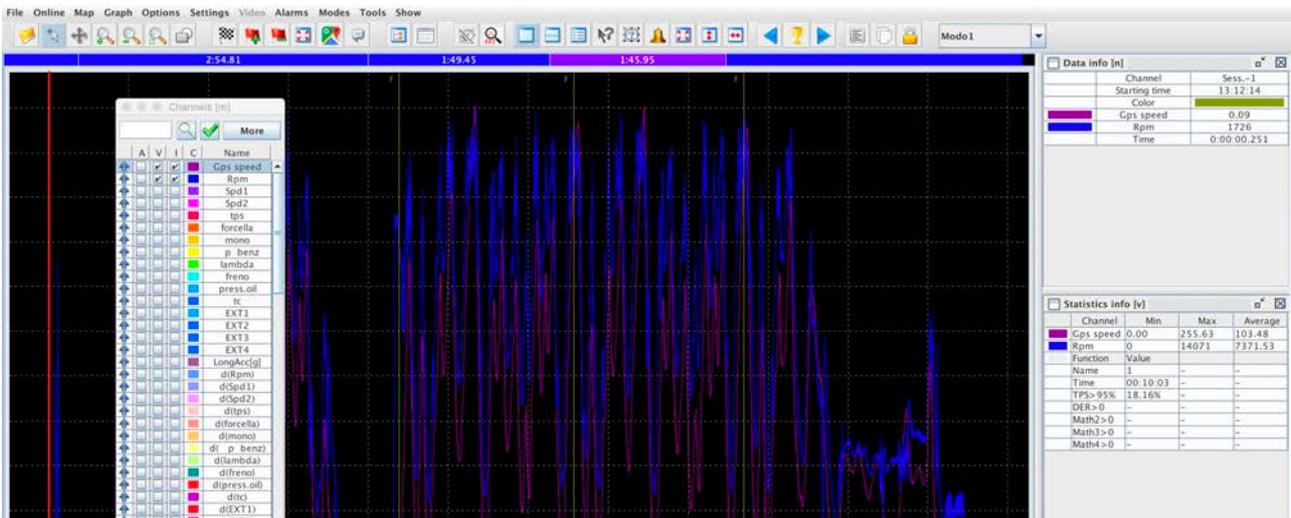
The window visible in the next window will appear on the screen. We then begin to discover the meaning of the various options present.

First of all, let's start from the first three checkmarks present, momentarily ignoring the vertical arrow. The three ticks indicate if we want to 1) view the axis of the channel, 2) view the channel 3) view the channel in the Info window.

To better understand these functions, let's try to select for example the RPM and the GPS speed.



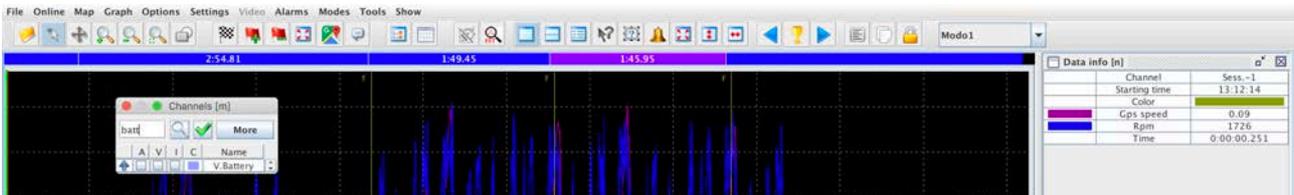
As you can see in the image, on the left there will be the two vertical axes relating to RPM and GPS speed. As the channels displayed increase, the space relating to the axes could become important (it is therefore possible to display a maximum of 4 axes per graph), while we will discover in the next tutorials how it will not be necessary to have axes in order to view the value of the curve. We then proceed to uncheck the two selected channels, thus removing the axes.



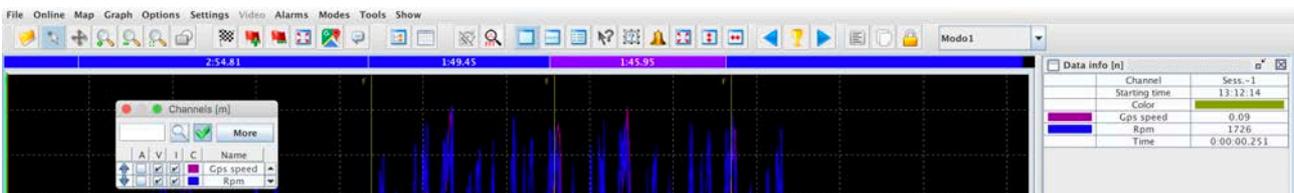
The last check allows us to indicate whether we want the channel to be present in the side window relating to the info (we will analyze this window in the next tutorials). It is often not interesting to visualize the entire graph of a curve, but we can only be interested in the value at a certain point, so we can choose to display channels ONLY in the info window, as shown in the figure.



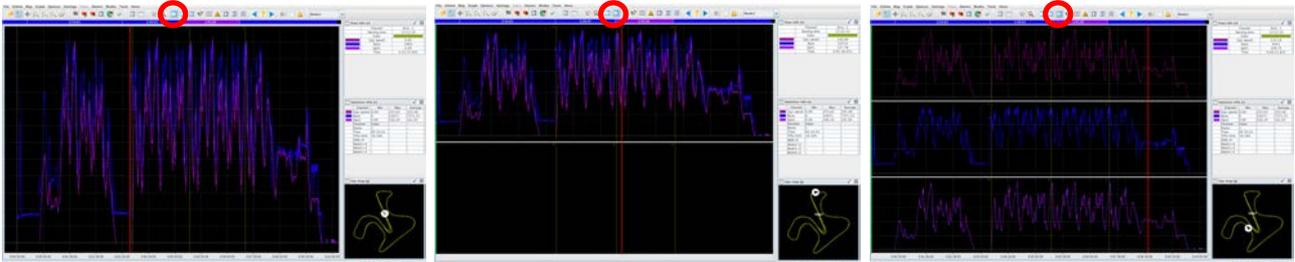
We then continue the analysis of the functions present in the channel window. Danas Pro allows you to manage more than 180 channels, so it may be inconvenient to scroll through the list in search of the desired channel. The search function allows us to easily isolate the channels of interest. In the example below, for example, the one relating to the battery.



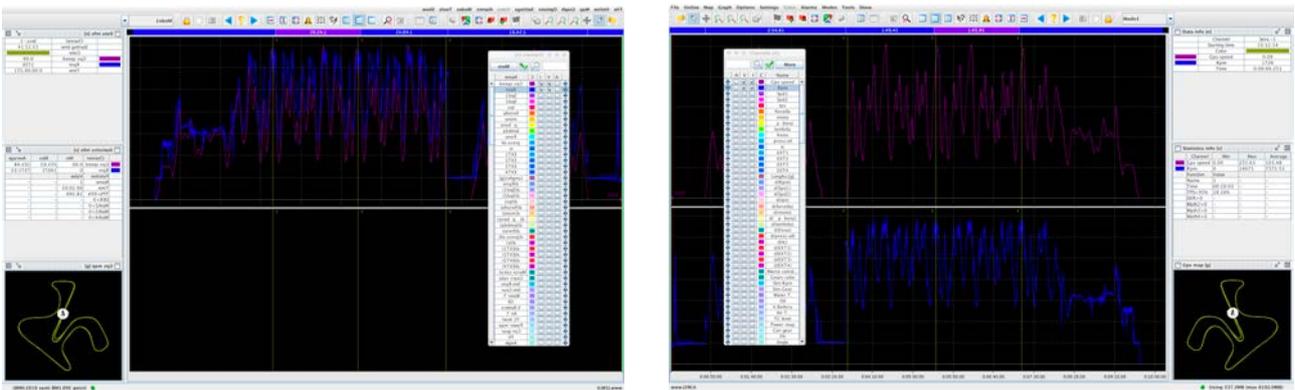
In the same way, it might be convenient to have an eye only on the settings relating to the channels we have selected, so the green check allows us to show only the latter channels.



We have neglected the meaning of the arrow in the first column. To understand this arrow we must first anticipate how Danas Pro handles the graphs. In the icon bar there are three buttons that allow us to choose between three distinct modes: single graph, double graph or one graph for each channel. In the image below we can see three channels displayed in the three modes:



In the first mode all the graphs are superimposed, in the last each channel has a separate graph while in the intermediate one there are only two graphs. The arrow in the channel window next to each channel therefore indicates whether we want to view, in this mode, the channel in the upper or lower graph as shown below.

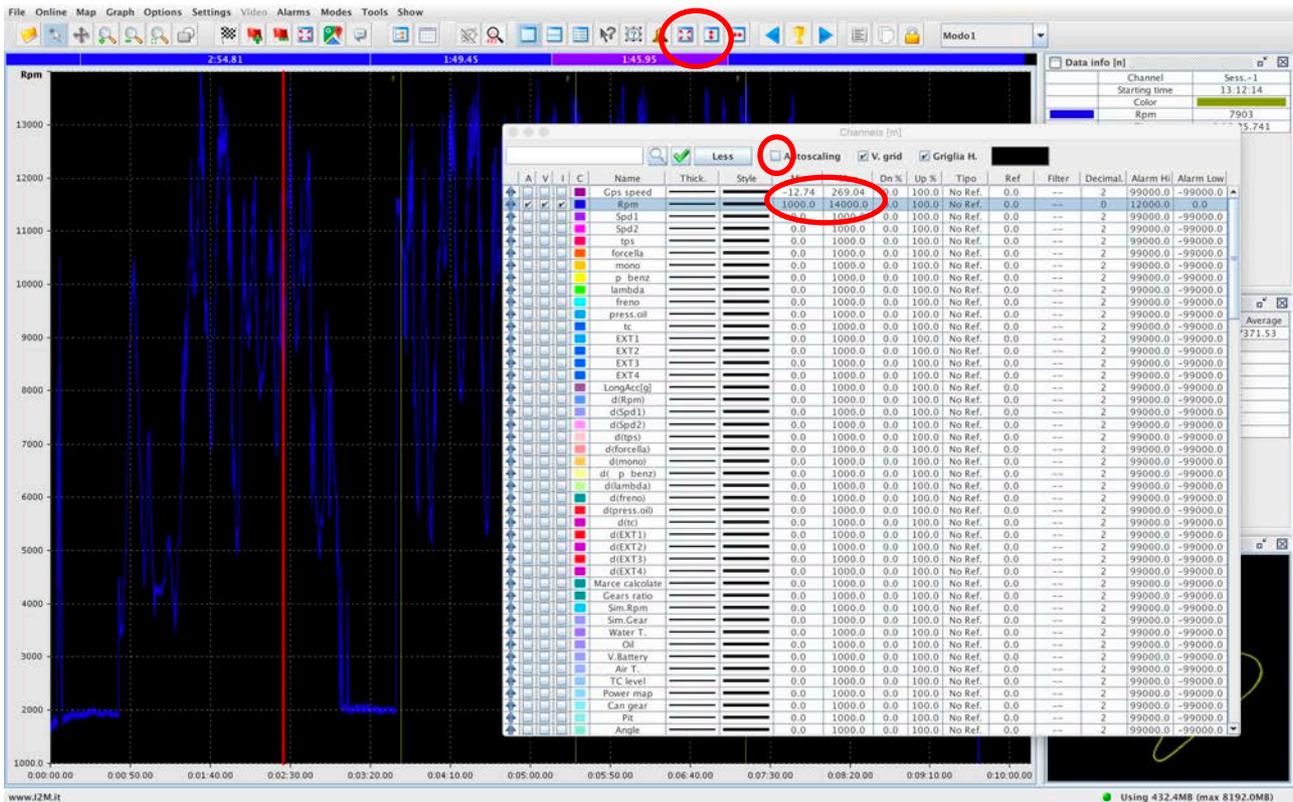


The window relating to the display of the channels can however provide us with much more information relating to each graph. By pressing the “More” button it is possible to access the complete window visible in the next image.

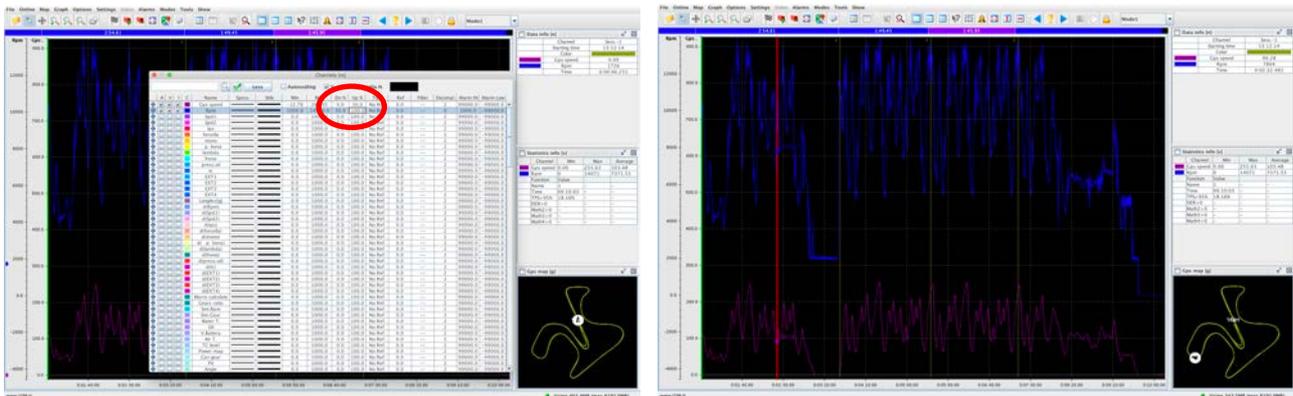
So let's analyze the various additional columns now visible. The first two additional columns allow us to modify the thickness and line style of each curve. We can then increase the thickness to make it more visible (for example working under the sunlight) or make a dotted curve for example.

The subsequent columns indicate the minimum and maximum value of the vertical axis of the channel relating to that line. To be able to modify them we must first remove the check in the upper part of the window relating to autoscaling so that we can manually choose the axis. For example, in the following image we have set the display of the RPM graph only by forcing the scale between 1000 and 14000. After setting the parameters it is often necessary to perform a fit (or a vertical fit) using the appropriate buttons on the bar (or from the menu graphic).

Choosing the visualization through a single graph and visualizing several channels at the same time the visualization can be confusing, moreover it is not always true that we attribute to each channel the same importance in the visualization.

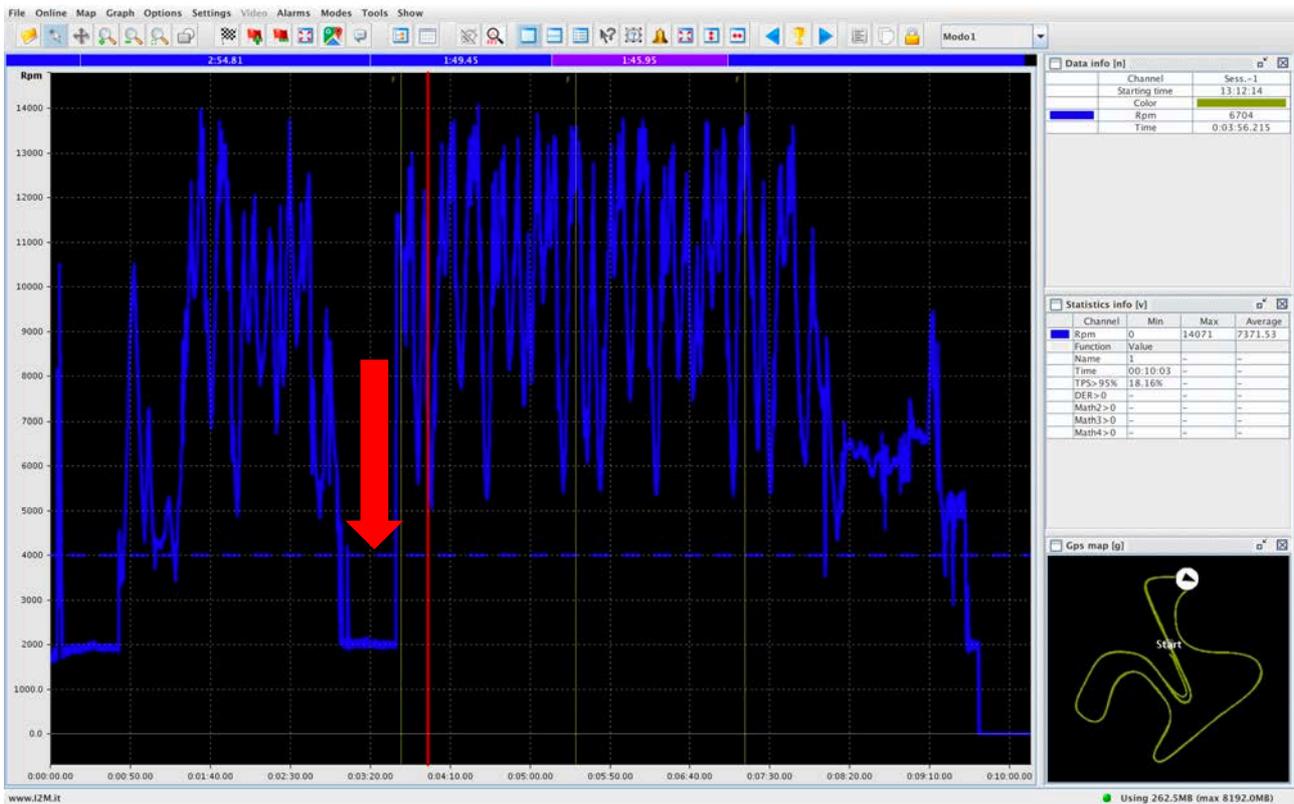


The columns relating to DN% and UP% allow us to choose which portion of the graph should be reserved for each channel (the portions can overlap). For example, suppose we still want to view the RPM and GPS speed but that for us the important information is the RPM to which we want to allocate 70% of the space. It will be enough for us to indicate, as shown in the following images, that the GPS speed must occupy the space between 0% and 30% of the graph while the RPMs between 30% and 70%.

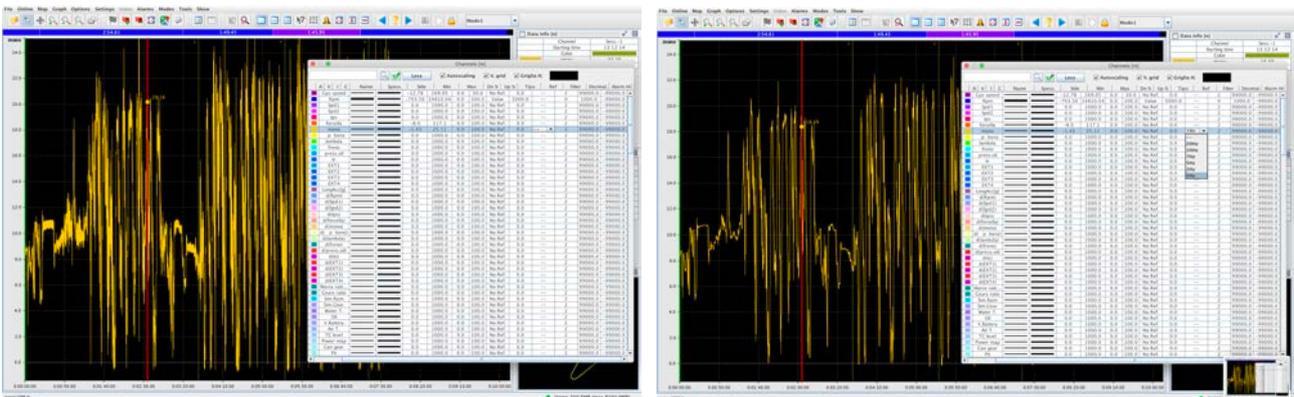


This configuration can be repeated for each channel to create your own fully configured display. Currently these settings will be lost by closing Danas Pro. We will learn in the tutorial on managing the "Modes" how to create and save custom views to which we will give dedicated names so as to be easily recognizable.

The channel display window allows us to perform even the first simple analyzes on the displayed channels. The columns relating to the "Type" and "Ref" allow us to display on the graph of each channel a reference line that can indicate the maximum, minimum, average value or a specific value that we can indicate in the Ref column. below, for example, the RPM graph with reference to the value 4000.

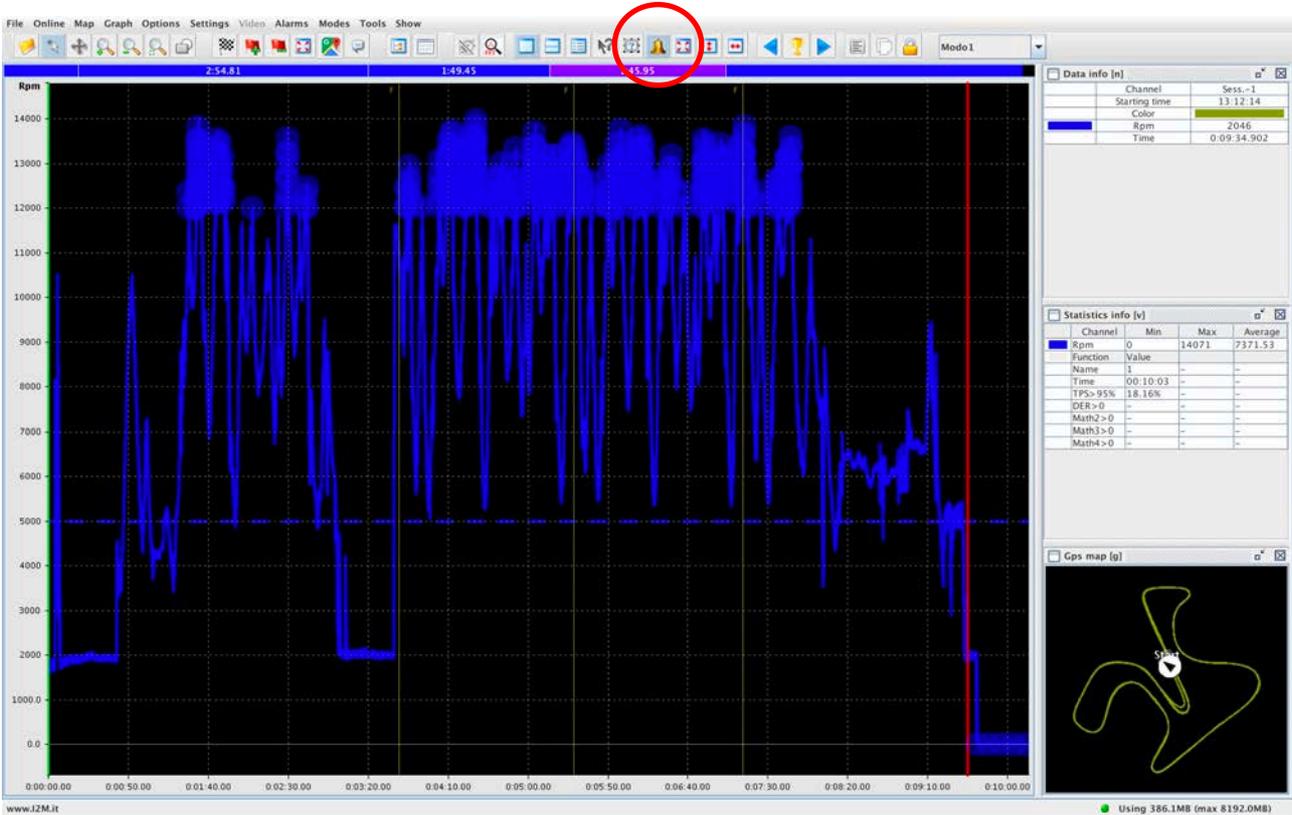


In the last columns there are some very practical functions in the visualization. The “decimal” column indicates with how many decimal digits we want the information relating to that channel to be displayed in the Info window while the “Filter” column allows us to apply a filter to the display of that channel. When acquiring analog channels such as suspension travel or brake pressure sensors, it is very common for signals to be noisy due to vibrations on the motorcycle. By applying filters we can reduce the noise present, below an image, for illustrative purposes only, in which the channel relating to the stroke of the mono shock absorber has been displayed with the original band (on the left) and filtered with a 1Hz band (on the right).



Through the use of the reference lines we were able to graphically display very precise values line or alternatively minimum, maximum values or the average of the channel. However, it may be useful to quickly visualize the points where a channel exceeds a high threshold value or is below a low threshold value (as in the case of temperatures).

Through the channel display window, we can set a low threshold value and a high threshold value for each channel so as to immediately highlight the furthest points from this range. In the image below, for example, we have tried to understand when our RPM curve exceeded the value of 12000 by setting Hi = 12000 as a value and activating the alarm function with the appropriate key highlighted in the image.



ATTENTION: this function is extremely heavy from a graphical point of view and is normally used only in "Lap" mode where the number of points is lower and in general it is activated and deactivated if necessary in order not to make graphic operations difficult. In a future tutorial we will explore the various possibilities in which Danas Pro can manage the alarms related to the various channels and how to customize them.

The settings relating to the display of vertical and horizontal grids and the choice of the background color also find space within the channel screen.

