Origin Graph Templates

- Laurie A. Shea

Introduction

Origin graph templates, like layers, are a powerful Origin feature. Layers make a complicated graphical presentation possible, and graph templates make recreating that same presentation simple. This article will define an Origin graph template, discuss modifying a built-in template, and provide an example to show how modifications to a built-in template can be saved as a user-created template for future plotting.

There are many ways to arrange layers on a page. In fact, Origin provides a number of basic arrangements for you. Some of them include the Double-Y axis plot and the Stacked Layer plots, but there are many more possible arrangements that you might need to create. And once you have spent the time manually creating these, you will want to save your work as a template for future use.

In the provided example you will recreate the multiple axis graph used by Ford engineers. This graph can be found in the application article, **Custom Application for Ford, Reduces Graphing of Transmission Testing Data by 95%** on our website. Read any of the application articles on our website, and you will see many good examples of user-created templates.

If you are unfamiliar with the layer concept it is suggested that you read the four part series on layers called Understanding and Working with Layers (Part 1 – Part 4).

Please continue to the next page to learn more.

Definition of an Origin Graph Template

Origin Graph Templates

Synonyms for the word template include prototype, pattern, guide, blueprint, and model. With that in mind, the purpose of an Origin graph template is to provide Origin with instructions on how to plot your data, arrange the layer(s) in the graph window, and set up the properties of the page (graph window).

For example, if you decide to plot your data as a line plot, Origin will use the line template because it includes the instructions necessary to plot your data as a line plot. In fact, when you plot your data by selecting from any one of the 2D or 3D plot types available, Origin plots your data into a graph window created from a corresponding template file.

How Many Built-in Templates Are There?

If you were to select **View:Toolbars** and count the number of buttons on the 2D Graphs, 2D Graphs Extended, and 3D Graphs toolbars, you would count 59 buttons. Since each button corresponds to a unique template file, Origin provides 59 built-in graph templates.

Modifying a graph template

The default settings that define Origin's 59 built-in graph templates can be changed. For instance, when you select a single dataset and plot it as a scatter plot, Origin plots the data as solid black squares by default. (The first symbol in the symbol gallery is the solid square and the first color in the symbol color list is black.) However, if you would prefer the default to be solid red circles, all you need to do is the following:

1. Create a scatter graph by selecting a Y column and then **Plot:Scatter**.
2. Open the Plot Details dialog box by selecting **Format:Plot** or by right-clicking on the plotted data to open a shortcut menu and then selecting **Plot Details**.
3. On the Symbol tab, modify the properties of the plot so that you have solid red circles.
4. Select **File:Save Template As**. In the Save As dialog box that opens, click Save. This will update the existing scatter template file (**scatter.otp**) to include your modifications.

Creating your own graph template

In addition to modifying Origin's built-in templates, you can create your own custom templates. After you've modified the graph to your liking, these customizations can be saved in a new template file. To do so, select **File:Save Template As**, enter a new,

unique name for the file, and click Save. Essentially you have just added a new plot type to Origin.

Plotting into your template

After creating your own graph template, it is easy to plot into it the next time that you have similar datasets. First, select the data to be plotted by highlighting the appropriate columns (or ranges) of data in your worksheet. Next, click the Template button on the 2D Graphs toolbar or select **Plot:Template**. In the Open dialog box select *.OTP (OTP stands for Origin Template Plot) from the files of type drop-down list. Finally, select the desired template and click the Open button to plot.

> **Note: Additional plotting methods which include drag-and-drop, Select Columns for Plotting, importing directly into the graph window, and adding data through the Layer *n* dialog box can also be used to plot into a template.**

Now that you have the general idea of what a graph template is and does, take a look at some Frequently Asked Questions (**FAQs**).

FAQ's Regarding Origin Templates

Question:
Do my datasets get saved when I save a template?

Answer:
No, your datasets do not get saved, but the information about how the data was plotted does get saved. If you want to save your datasets with your graph window, select **File:Save Window As** to save the graph window as a separate *.OGG (Origin Graph) file. The saved window can then be opened in any other Origin project by selecting **File:Open** and specifying *Origin Graphs *.OGG* in the Files of Type drop-down list.

Question:
If I plot multiple datasets with different plot types into one graph, will Origin remember this?

Answer:
When saving a graph as a template, the properties of each dataset in the graph get mapped to a placeholder in the order in which the datasets were plotted. When a new plot is created from this template, the first dataset added to the graph will be plotted using the data plot style information from the first holder, the second dataset will display using the second holder, and so on. Now you might ask what happens if more datasets are added to the layer than were saved as part of the template. In this case, Origin behaves differently depending upon the version of the software that you have. If you have version 6.0, Origin will use the information found in the last holder for all additional datasets plotted. In versions prior, Origin will default to a line plot.

Question:
How do I modify the template used when selecting File:New Graph or clicking on the New Graph button on the Standard toolbar?

Answer:
The default graph template used is called **origin.otp**. To change the default, select **File:New:Graph**, choose a graph type, and click the Default button. The next time that you select this menu item the default will be set to your previous selection. This will also be the template that opens when you click the New Graph button on the Standard toolbar.

Question:
Can I create worksheet templates?

Answer:
Yes. Like graph windows, worksheet windows are created from template files. Worksheet properties are found in the Worksheet Display Control dialog box, which can be opened by selecting **Format:Worksheet**. All these properties, as well as control objects associated with the window and the ASCII Import Options (**File:Import:ASCII Options**) get saved when you save the window as a template file. Also, like graph templates, worksheet templates do not save the data, only the properties for the data. For instance, the formulas in the Set Column Values dialog box are remembered. To save a worksheet template, select **File:Save Template As**.

Next, bring it all together with an example.

An example of creating your own graph template

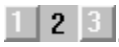
As mentioned earlier, the following example will take you through the steps to create, save, and reuse the multiple axis graph found in the **Custom Application for Ford, Reduces Graphing of Transmission Testing Data by 95%** application article. This template provided the foundation for their custom application.

Note: These steps are specific to Origin 6.0. If you have earlier versions, some of the dialog boxes may look different.

1. Begin this lesson by clicking the **New Graph** button  on the Standard toolbar.

2. Select **Edit:New Layer(Axes):(Normal):Bottom X + Left Y**.

3. Repeat step 2, so that you now have three layers as indicated by the three layer icons  in the top left corner of the graph window.

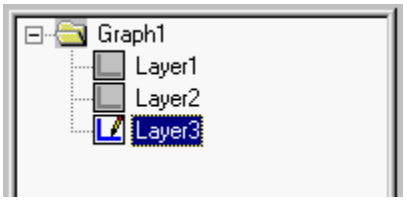
4. Click on the layer 2 icon to make layer 2 active 

. Right-click on the layer 2 icon and select the **Layer Properties** shortcut menu command to open the Plot Details dialog box.

5. Select the Link Axes Scales tab. Select Layer 1 from the Link To drop-down list. Set the X Axis Link to Straight (1 to 1) and leave the Y Axis Link at None.

6. Select the Size/Speed tab. Set the Units to % of Linked Layer. The Left and Top should then be set to 0 and the Width and Height to 100.

7. Select Layer 3 from the navigation tree in the Plot Details dialog box.



8. Repeat steps 5 and 6 and click OK.

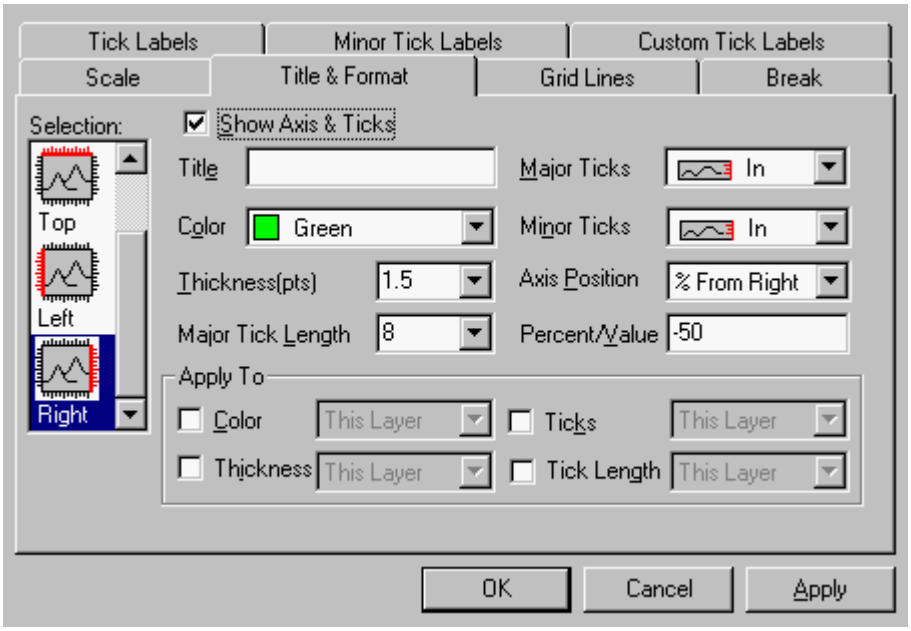
9. With the layer 2 icon selected, select **Format:Axes:Y Axis** to open the Axes dialog box.

10. Select the Title & Format tab and uncheck the Show Axis & Ticks check box for the Left Selection.

11. Scroll through the Selection list box and select Right 

from the Selection list box. This takes you to the Title & Format tab for the right Y axis in layer 2.

12. Check the Show Axis & Ticks check box, set the Color to Green, and the Axis Position to % From Right with a Percent/Value of -50. The dialog box should look as follows:



13. Select the Tick Labels tab. Confirm that the Right Selection is still highlighted and check the Show Major Labels checkbox.

14. Select Left 

from the Selection list box. This takes you to the Tick Labels tab for the left Y axis in layer 2. Uncheck the Show Major Labels checkbox and click OK.

15. Select the layer 3 icon 

and then select **Format:Axes:Y Axis** to open the Axes dialog box for layer 3.

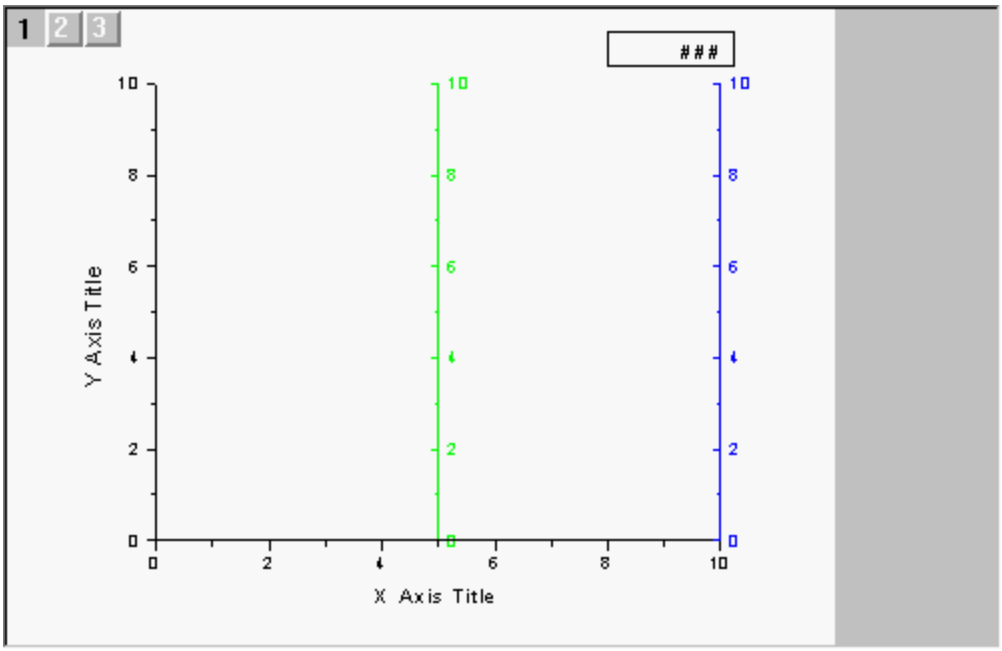
16. Confirm that Left is selected in the Selection list box, select the Title & Format tab, and uncheck the Show Axis & Ticks checkbox.

17. Select Right from the Selection list box, check the Show Axis & Ticks checkbox and set the Color to Blue.

18. Select the Tick Labels tab and check the Show Major Labels checkbox.

19. Select Left from the Selection list box and uncheck the Show Major Labels check box. Click OK to complete the multiple axes setup.

Your graph should now look like the following:



Note: **On the Ford graph, axis titles and a graph title were added and a custom legend was created. In Origin each layer has its own legend. However, it is possible to create one legend for the entire graph window. For more information please consult your Origin User's Manual. These customizations all get saved as part of the template.**

You have now created a multiple axes graph window similar to the graph template used by Ford, but before you can save your graph window as a template you must plot data into it. Otherwise there would be no plot style information saved and any datasets plotted into this template in the future would, by default, plot as a line.

Saving your Graph Template for Future Plotting

To plot some data, set up a worksheet in the following manner. To do so, click the New Worksheet button on the Standard toolbar. Add two new columns to the worksheet by selecting **Column:Add New Columns** and entering 2 into the dialog box that opens.

	A[X]	B[Y]	C[Y]	D[Y]
1	1	1.5	1.9	0.9
2	2	3.5	2.9	4.5
3	3	5.9	4	6.7
4	4	7.5	4.3	7
5	5	8.4	5	7.5
6	7	8.3	6	8
7				

1. Highlight the B(Y) column.

2. Make your graph window active. Click on the layer 1 icon to make layer 1 the active layer. Select **Graph:Add Plot to Layer:Line+Symbol**. The B(Y) column plots as a line+symbol plot in layer 1.

3. Go back to your worksheet and highlight the C(Y) column.

4. Make your graph window active. Click on the layer 2 icon to make layer 2 the active layer. Select **Graph:Add Plot to Layer:Line+Symbol**. The C(Y) column plots as a line+symbol plot in layer 2.

5. Go back to your worksheet and highlight the D(Y) column.

6. Make your graph window active. Click on the layer 3 icon to make layer 3 the active layer. Select **Graph:Add Plot to Layer:Line+Symbol**. The D(Y) column plots as a line+symbol plot in layer 3.

7. Double-click on the plotted data to open the Plot Details dialog box. From here you can modify symbol and color settings. Set the symbol color for each data plot to the same color as the associated Y axis by clicking the Symbol Color button and then selecting a color from the Individual Color list. In doing so, this color codes the graph making it easier to read.

> **Reminders: The color for layer 1 is black, layer 2 is green, and layer 3 is blue. Activate each data plot in Plot Details by selecting it from the navigation tree.**

8. Now select **File:Save Template As**. Alternatively, right-click on the window title bar and select **Save Template As** from the shortcut menu. In the Save As dialog box, specify a new file name, such as *mytemplate.otp*.

> ***Note:*** **Do not save this graph as *origin.otp* because this will overwrite and replace the default Origin graph template.**

Now that you have successfully created and saved the graph template, continue reading to learn how to plot into *mytemplate.otp* the next time you have similar sets of data.

Plotting into Your User-Created Template

Now that the template is complete, it is even easier to plot - in fact, this is the power of the template. To see for yourself, highlight the three Y columns (B, C, and D) in the worksheet you recently created. Then, click the Template button  on the 2D Graphs toolbar or select **Plot:Template**. In the Open dialog box, select *.OTP from the Files of Type drop-down list, locate *mytemplate*, and click Open. Origin will automatically plot the first selected Y column in the first layer, the second selected dataset in the second layer and so on.

The Ford customization tool took it one step further and automated the plotting with a batch processing script. This script automates the repetitive task of creating similar graphs with different datasets. Like the Ford custom application that used script to

access the plot template, you too may want to write your own script. To get you started, here is the section of script that was used to plot the data in Ford's custom application:

```
%W=%H;                          //store the name of the active window
window -t plot mytemplate Test; //open graph window naming it Test
page.active=1;                  //make layer 1 active
layer -i %(%W,2);               //plot first Y column into layer 1
page.active=2;                  //make layer 2 active
layer -i %(%W,3);               //plot second Y column in layer 2
page.active=3;                  //make layer 3 active
layer -i %(%W,4);               //plot third Y column in layer 3
```

For more information, please refer to your **LabTalk® Manual** or visit the LabTalk Resources Page on our website.

I hope that you have found this article helpful. Please feel free to contact your local technical support representative if you have any questions about creating your own graph templates.