

# Designing a Series100 Front Panel

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This is a first and pretty rough draft of the instructions for using Eagle to create a StdBx front panel layout. Provide feedback by opening issues in GitHub or send email to [stdbxmdrtr@gmail.com](mailto:stdbxmdrtr@gmail.com).

1. Using Eagle CAD create a new schematic file. Add the component "SERIES\_100" from the "StdBxLibrary.lbr". Place the component anywhere on your schematic.
2. Click the "Generate/Switch to Board" button. You will get a dialog stating that your board file does not exist. Click "Yes" to create the board file from the schematic.
3. When the layout editor opens it will show two board outlines. The one on the left is the StdBx Series100 board definition. You can recognize it because it has mounting holes in the corners. The one on the right is the default board outline generated by Eagle. The default outline has no mounting holes. Delete the default board outline (the one on the right).
4. Move the Series100 board outline so that the bottom left corner is on the layout editor origin (the cross-hair). Once the board outline is moved you can click the "Zoom to Fit" button to make the board outline fill the edit window.
5. Click the "Switch to Schematic" button to go back to the schematic editor.
6. Draw the rest of your schematic. For LEDs, displays, switches, buttons, potentiometers, rotary encoders or any other component that "shows" through the front panel, choose only components from the "StdBxLibrary.lbr". Components that do not show on the front panel can be chosen from any library. Note that even components that don't show that are placed on the Top of the PCB can be no taller than 11 mm.
7. Continue your normal schematic edit and board layout process until your design is complete.
8. You can get a preview of your front panel layout by clicking on the "Layer Settings..." button and making layers 244, 245 and 246 visible. Click "Apply". This might give you a very cluttered view. To simplify the edit window and see the front panel more clearly, click the "None" button, then re-enable layers 244, 245 and 246 and click "Apply". Now you can see just the front panel items. When you are finished editing which layers to view, click the "Ok" button. Note that you cannot edit layers that are not visible.
9. If you wish to add labels or legends to your front panel you can do so by clicking the "Text" tool button. When the dialog opens type in your text and click "Ok". Before you place your text, set the layer to "245 FP-Reveal" and the Ratio to "0%". You can set the size to anything you like however smaller text does not engrave as well as larger text. I have found that .05" is about the smallest I'm comfortable with. Once you have set the layer, size and ratio you can place the text wherever you would like. Keep in mind that the enclosure covers the outermost 1/16" of the front panel and knobs cover more than just the diameter of the shaft.
10. Once you have your front panel laid out and text placed you can output the StdBx laser cutting and engraving files. NOTE: Just like outputting GERBER files, you do this only when your design is ready to be fabricated. If you output your StdBx files and then make more edits to the PCB then the front panel might not match the PCB anymore.

To output the StdBx files, click the “Run ULP” button in the layout editor. In the dialog that pops up choose “cam2dxf.ulp” and click “Open”. Next an open-file dialog will appear. In this dialog choose “StdBxSeries100.cam” and again click “Open”. Next another dialog will open with a Help tab. Click “OK” at this dialog. You will see some activity in the layout editor window, but pretty quickly that stops. If you then look in the same folder as the schematic and board layout you will see two new files, *myDesign\_Bottom* and *myDesign\_Top*.

11. That’s it. You have designed your front panel. If you find you do have to edit your PCB layout, just remember to go back and repeat step 10. Also, the text placed on layer 245 does NOT move automatically when you move components so remember to move the text when you move the component it goes with.
12. See “**Ordering the Front Panel**” to get your front panel fabricated.