The default Cpk – Process Capability report does not show any Factor values, but it is possible to add those values into the template. This document gives step-by-step directions for inserting a Text Factor into the default Cpk – Process Capability Mulitple Plots template.

Designing the Template

In order to add a Factor value to the report, the Report Designer must be used. These are the general steps for getting into the Report Designer to modify the template for the Cpk – Process Capability Multiple Plots report.

- 1. From QC-CALC SPC choose the Report Cpk Process Capability menu.
- 2. Choose the dimensions and click **OK**.
- 3. On the next screen that shows the 2 graphs, click the **Print** button.

| Print using : C:\Prol | ink\QC-CALC 3.4 | Template\Default\C | AP.LBL X |
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| Options Print to Printer | | | Sort By |
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| C:\Prolink\QC-CALC | 3.4 QC\report | | All Dimensions Only Bad Dimensions |
| Open in Def <u>a</u> ult A | | Browse | |
| Send report in er | nail | Config | |
| Include Table | | Multiple Plots | |
| | | Print S | etup <u>OK</u> ancel |

4. The next screen is the **Print using** screen. Verify the template location at the top of the screen is the template you want to edit (use the **Options – Select Templates** menu to change the template location or the **Options – Copy Templates** menu to move a copy of the template to a different location) and make sure the **Multiple Plots** check box is checked, then choose **Design Template** and click **OK**.

| Design the Template - C:\Prolink\QC-CALC 3.4\Tu | emplate\Default\cap.LBL | _ . X |
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5. The Report Designer now appears on the screen.

Adding Cpk to the Calculation Box

These directions will add Text Factor 1 to the box that contains the calculations.

- 1. In the **Objects** panel in the upper left corner, double click on the "Text 1" item. Note: You can also double click on the item on the right side of the screen and accomplish the same thing.
- 2. The **Paragraph Properties** window is now displayed. Highlight the line you would like to have below the Text Factor line we are going to add and click the **Insert a Paragraph** button.

| Paragraph Pr | operties | × |
|---|--|---------|
| Paragraphs: | | • |
| <pre>Size+ *+FstrS(Sample_Size, "#####&") "Upper Spec+ *+FstrS(Upper_Spec_Limit, *&*+RepS("#", Precision "Lower Spec+ *+FstrS(Lower_Spec_Limit, *&*+RepS("#", Precision "Nominal+ *+FstrS(Nominal, *&*+RepS("#", Precision)) " " " " Chi Square+ *+FstrS(Chi_Square, ####&.####") "% of Tol+ *+FstrS(Per_of_Tol, "####&.#%") " " " " " (DisplayPpk, "Pp+", "Cp+")+fstrS(Cp, *&*+RepS("#", Precision)) If(DisplayPpk, "Cp+", "Cp by Range+")+fstrS(Cp_R, *&*+RepS("#", Pre If(DisplayPpk, "Cp+*, "Cpk by Range+")+fstrS(if(Nominal = Lower_Spe If(DisplayPpk, "Ppk Upper+", "Cpk Upper+")+if(Nominal = Lower_Spe If(DisplayPpk, "Ppk Upper+", "Cpk Upper+")+if(Nominal = Upper_Spe</pre> | Blank Optimization Yes Inerasable Yes Justified No Line Spacing 0.0 pt Line Wrap Trun | ys Show |
| If(DisplayPpk, "Ppk Lower+", "Cpk Lower+")+if(Nominal = Lower_Spec | Paragraph Spacing 0.0 pt Appearance OK | Cancel |

 In the Edit Text window that appears, expand the Variables list in the Variables and Functions tab then scroll down and highlight the "Text_Factor_1_Label" item.

| Variables and Functions Condition Text Date Format Number Format Operators | |
|---|-----------------------------------|
| Functions: Functions: Standard_Deviation Start_Date Text_Factor_1 Text_Factor_1_Label Text_Factor_10 Text_Factor_10_Label Text_Factor_11 Text_Factor_11 Text_Factor_11 Text_Factor_11 Text_Factor_11 Text_Factor_11 | |
| Text_Factor_12 | • sert |
| Text_Factor_1_Label | () () Σ _Σ <u>(%</u> |
| | •) (*) |

- 4. Now click the **Insert** button and you'll see the "Text_Factor_1_Label" item shown in the bottom window along with the actual value of the label displayed next to the blue "i" below the box.
- 5. Next we want to put a colon and spaces between the label and the value, so after the "Text_Factor_1_Label" item in the bottom window, type: +": "+ (a few spaces between the : and the end ").

6. Now go back to the Variables list and highlight the "Text_Factor_1" item and click the Insert button. At this point the error you were seeing next to the blue "i" will be cleared and you will see the name of your Text Factor 1 column along with a value from that column.

| Edit Text | × |
|--|------------------------------------|
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| Image: A string functions | _Insert |
| Text_Factor_1_Label+": "+Text_Factor_1 | () () Σ _Σ <u>(</u>) |
| Image: Line: 22514415.12.1.11 | , 1) (1 |
| ОК | Cancel |

7. When you look at the "Text 1" area of the **Layout Preview** screen you should now see the new line in the box. Make sure that all lines are still visible. You may need to stretch the window to get enough room for all lines to show or you may need to decrease the font of some items.

| 1 - X Hole Position Sample.qcc | | Prolink, Inc. November 18, 2015 | |
|-----------------------------------|------------|------------------------------------|--|
| Line: 225144 | 15.12.1.11 | Frocess Capability | |
| Sample Size | 100 | | |
| Upper Spec | 1.0010 | 0 + | |
| Lower Spec | 0.9990 | | |
| Nominal | 1.0000 | | |
| | | 0 + | |
| Chi Square | 4.4000 | 0.9984 0.9994 1.0005 1.0015 | |
| % of Tol | 149.3% | Shifted Process Capability | |
| C | 0 6600 | 1 [| |
| CP | 0.6699 | | |
| Cp by Range | 0.6427 | | |
| Cpk | 0.6007 | | |
| Cpk by Range | 0.5764 | | |
| Cpk Upper | 0.7391 | 0.9984 0.9994 1.0005 1.0015 | |
| <u></u> | <u></u> | | |



- 8. In this case we will need to decrease the font of the line we just added and also decrease the font of the 2 blank lines in order to get the "Cpk Lower" line to appear at the bottom.
- Double-click on the Text 1 box to bring up the Paragraph Properties window again. Highlight the new line ("Text_Factor_1_Label+ ...") and change the Font to Default = "No", then type "7" into the Size box. This will make that line match all the other lines.

| Paragraph Properties | | | |
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| Text_Factor_1_Label+": "+Text_Factor_1 | Appearance | ^ | - |
| "Sample Size+ "+FStr\$(Sample_Size, "#####&") | Font | [Arial 7.0 pt] | |
| "Upper Spec+"+FStr\$(Upper_Spec_Limit,"&."+Rep\$("#",Precision | Default | No | |
| "Lower Spec+"+Fstr\$(Lower_Spec_Limit,"&."+Rep\$("#",Precision "Nominal+"+FStr\$(Nominal,"&."+Rep\$("#",Precision)) | Name | Arial Ab 🖺 | |
| " | Character Set | Western | |
| "Chi Square+"+FStr\$(Chi_Square,"###&.####") | Size | 7 | |
| "% of Tol+ "+FStr\$(Per_of_Tol, "####&.#%") | Width | Standard | |
| н н | Bold | No | |
| lf(DisplayPpk,"Pp+","Cp+")+fstr\$(Cp,"&."+Rep\$("#",Precision)) | Italic | No | |
| lf(DisplayPpk, "Cp+", "Cp by Range+")+fstr\$(Cp_R,"&."+Rep\$("#",Pre | Underlined | No | |
| lf(DisplayPpk, "Ppk+", "Cpk+")+fstr\$(if(Nominal = Lower_Spec_Limit,Cp lf(DisplayPpk, "Cpk+", "Cpk by Range+")+fstr\$(if(Nominal = Lower_Spe | Strikeout | No | |
| If(DisplayPpk, "Ppk Upper+", "Cpk Upper+")+if(Nominal = Upper_Spec_ | Color | LL.Color.Black | |
| lf(DisplayPpk,"Ppk Lower+","Cpk Lower+")+if(Nominal = Lower_Spec_ | Font.Size | | - |
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| ۰ الله الله الله الله الله الله الله الل | | | |
| | | OK Cancel |] |

- 10. That helped a little, but the Cpk Lower value still isn't fully visible. In this case we're going to decrease the font of both blank lines at the same time.
- 11. Back in the **Paragraph Properties** box, highlight both lines that just show " " without any words. Use the CTRL key to click and get only those 2 lines highlighted. Now change the **Size** item for both lines by typing a "3" into that box.

| Paragraph Properties | | | |
|---|---|---|--|
| Paragraphs: 💣 😭 🗙 🐚 🖺 🕈 🛛 | | 0 | |
| Text_Factor_1_Label+": "+Text_Factor_1 "Sample Size+"+FStr\$(Sample_Size,"#####&\") "Upper Spec+"+FStr\$(Upper_Spec_Limit, "&."+Rep\$("#",Precision "Lower Spec+"+FStr\$(Lower_Spec_Limit, "&."+Rep\$("#",Precision "Nominal+"+FStr\$(Nominal "&\"+Rep\$("#",Precision)) "" "Chi Square+"+FStr\$(Chi_Square,"###&\;####") "% of Tol+"+FStr\$(Per of Tol,"####&\;#%") | | Ľ | |
| If(DisplayPpk, "Pp=", Cp=)+isu's(Cp,&r +RepS("#",Precision)) If(DisplayPpk, "Cp+", "Cp by Range+")+fstrS(Cp, R, "-&"+RepS("#",Pre If(DisplayPpk, "Ppk+", "Cpk+")+fstrS(if(Nominal = Lower_Spec_Limit,Cr; If(DisplayPpk, "Cpk+", "Cpk by Range+")+fstrS(if(Nominal = Lower_Spec_ If(DisplayPpk, "Ppk Lower+", "Cpk Lower+")+if(Nominal = Lower_Spec_ | Underlined No Strikeout No Color LL.Color.Black | | |
| | OK Cancel | | |

- 12. Now when you click OK you should see the "Cpk Lower" line clearly.
- Click File Save, then File Exit to get out of the Report Designer and run your report to see how it looks.