

How-to Guide

Set up a 96-well plate layout

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1 Introduction

As an alternative to entering your observation data using the Observations editor, you can enter your observation data based on the layout of the plate that you used to perform the assay.

As PLA 3.0 is not preconfigured with a specific plate layout, you can set up any layout you require, such as a 96-well plate layout or a 384-well plate layout. You can also set up several plates and distribute your observation data accordingly.

 **Note:** Setting up a plate layout is optional. If you do set up a plate layout, we recommend you use the position factors as described in this guide, as this allows for a fast setup.

About this task

In this example one 96-well plate layout is set up for a Quantitative response assay document with one Standard sample, two Test samples, and a Preparation scheme with 5 steps and 4 replicates.

Procedure

To enter your observation data based on a 96-well plate layout:

1. [Define the size of your plate.](#)
2. [Assign the plate positions.](#)
3. [Define your plate layout.](#)
4. [Acquire your data.](#)

2 Define the size of your plate

Use the Content editor to define the number of wells on your plate.

Procedure

To define the size of your plate:

1. Open the **Content** editor of your Quantitative response assay document.
2. Under **Setup**, expand the **Observation data** node.
 - 📘 **Tip:** For quick access, find the **Observation data** node in the **Outline** pane.
3. Add the positions: Go to the **Creatable elements** pane and double-click the **Column: Position factor** element.

You can define up to three positions - row, column, and plate. This example uses one plate only. Therefore, add two positions.

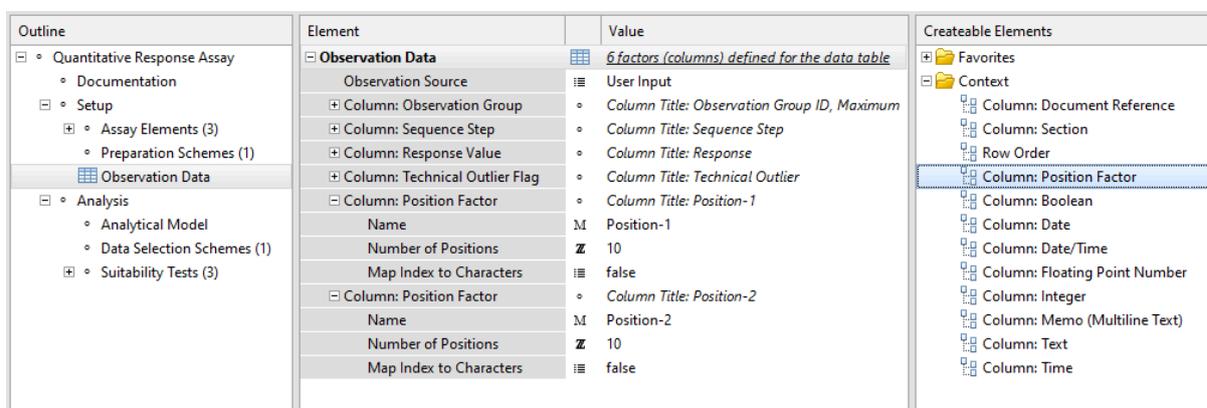


Figure 1. Position factor columns

- 📘 **Tip:** To set up several plates, add a third position factor named 'Plate' and use the **Number of positions** setting to define the number of plates you want to set up.
4. Rename the first position to 'Row' and the second position to 'Column'.
These are the column names that will be displayed in the **Observations** editor.
 5. Use the **Number of positions** setting to set the number of rows to '8' and the number of columns to '12'.
 - 📘 **Tip:** To define a 384-well plate, set the number of rows to '16' and the number of columns to '24'.
 6. By default, the rows in the **By Position** editor are numbered. To switch to alphabetical row labels ('A' to 'H'), select 'true' from the **Map index to characters** drop-down list.
Results: Your **Observation data** node should now look like this:

Element	Value
[-] Observation Data	<u>6 factors (columns) defined for the data table</u>
Observation Source	User Input
+ Column: Observation Group	o Column Title: Observation Group ID, Maximum
+ Column: Sequence Step	o Column Title: Sequence Step
+ Column: Response Value	o Column Title: Response
+ Column: Technical Outlier Flag	o Column Title: Technical Outlier
[-] Column: Position Factor	o Column Title: Row
Name	M Row
Number of Positions	Z 8
Map Index to Characters	true
[-] Column: Position Factor	o Column Title: Column
Name	M Column
Number of Positions	Z 12
Map Index to Characters	false

Figure 2. Column and row position factors in the Observation data node

7. Save your document.

3 Assign the plate positions

Use the Observations editor to assign observation data to the rows and columns of your plate.

Procedure

To assign plate positions:

1. Open the **Observations** editor.

Only the header row of the observation data table is displayed, as you did not assign plate positions yet. The **Row** and **Column** columns are available because you defined corresponding position factors in the **Content** editor.

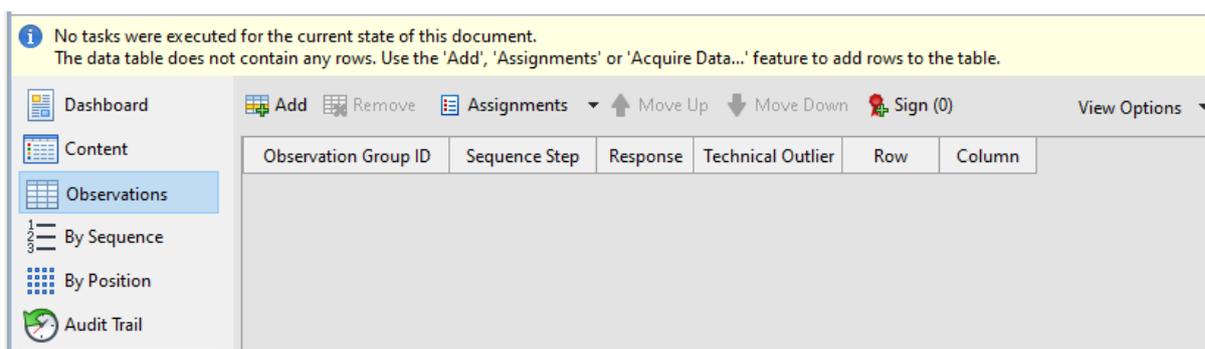


Figure 3. Empty observation data table

2. From the **Assignments** drop-down list, select **Position > Row -> Column**.

Tip: If you set up several plates, use the **Position > Plate -> Row -> Column** entry to assign positions for all your plates.

Results: PLA 3.0 automatically adds 96 lines, assigned to the rows and columns defined by the size of your plate. Your observation data table should now look like this:

■	Observation Group ID	Sequence Step	Response	Technical Outlier	Row	Column
1				false	A	1
2				false	A	2
3				false	A	3
4				false	A	4
5				false	A	5
6				false	A	6
7				false	A	7
8				false	A	8
9				false	A	9
10				false	A	10
11				false	A	11
12				false	A	12
13				false	B	1

Figure 4. Observation data table with row and column positions

3. Save your document.

4 Define your plate layout

Use the By Position editor to define how your samples are arranged on your plate.

About this task

Plate layouts are defined in two steps. You start by assigning assay elements to wells. In the second step you assign dilutions or sequence steps to wells.

To assign assay elements to wells, you can either use the observation group ID which provides a link between assay elements and observation data, or you can assign assay elements based on response values.

All required assignments are done in the table of the By Position editor, simply use the  drop-down list above the table to switch between the display options as required.

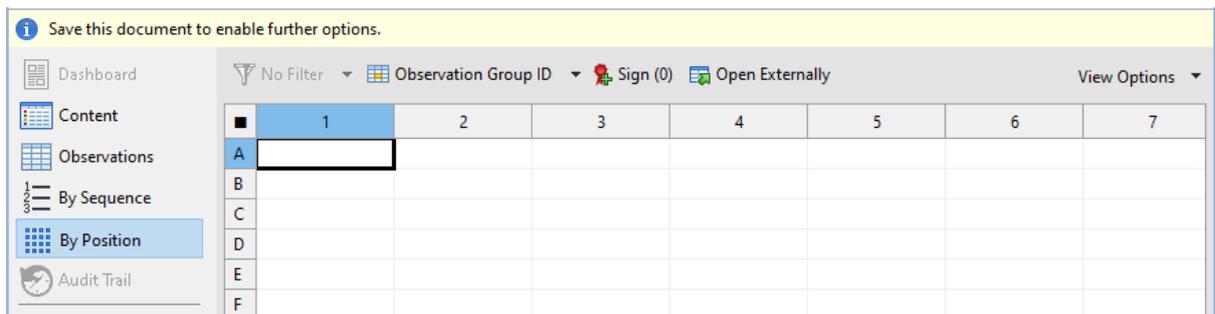
Tip: To improve the readability of your table, you can activate the grid color view option. This example uses the **By sequence step** grid coloring.

Procedure

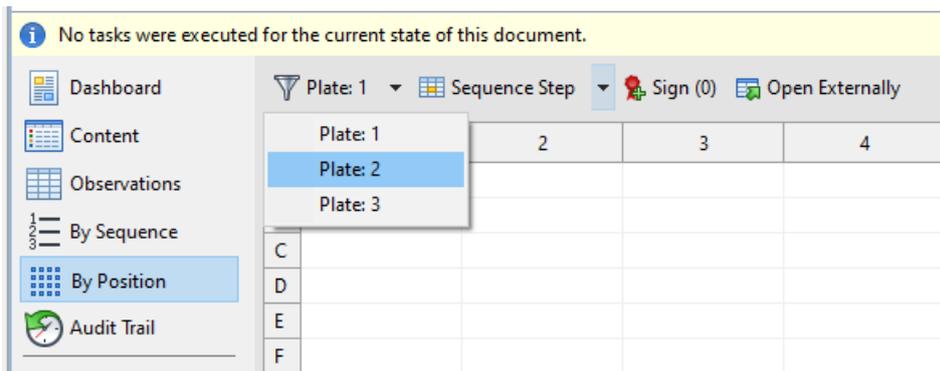
To define your plate layout:

1. Open the **By Position** editor.

One table cell corresponds to one well on your plate. As you did not define your plate layout yet, the table is empty.



Tip: If you set up several plates, use the filter to select the plate for which you want to define the layout.

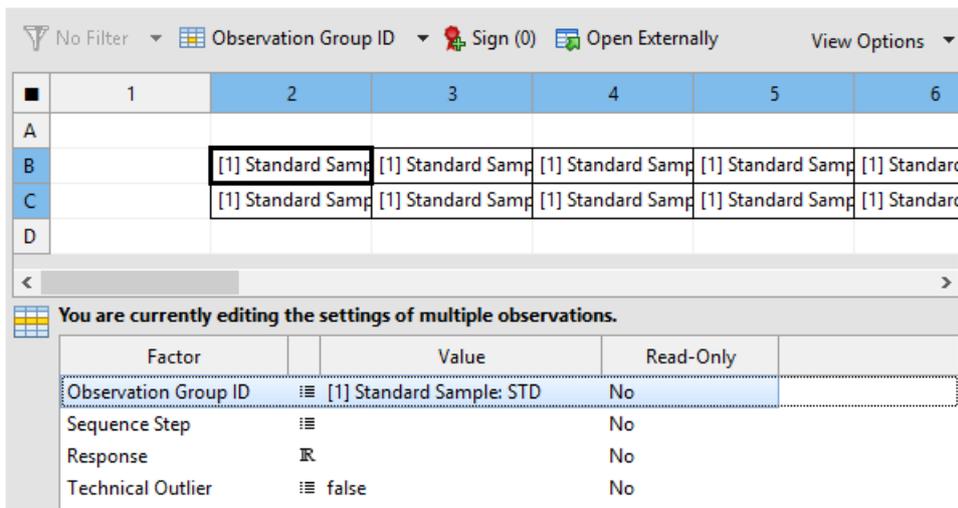


- Assign assay elements to wells: From the  drop-down list, select **Observation group ID**. Assign the observation group IDs according to the following logic:

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B		[1] Standard Samg										
C		[1] Standard Samg										
D		[2] Test Sample: U										
E		[2] Test Sample: U										
F		[3] Test Sample: U										
G		[3] Test Sample: U										
H												

Figure 5. Assignment of assay elements based on observation group IDs

 **Tip:** Use multi-cell editing to assign the same value to several cells in one step: Select the corresponding cells and, in the work area at the bottom, select the value that you want to assign to the cells.



The screenshot shows a multi-cell editing interface. At the top, there are filters: "No Filter", "Observation Group ID", "Sign (0)", and "Open Externally". Below the filters is a grid with columns 1-6 and rows A-D. Cells B2, B3, B4, B5, and C2 are selected and contain "[1] Standard Samg". Below the grid, a message states "You are currently editing the settings of multiple observations." A table below shows the settings for the selected cells:

Factor	Value	Read-Only
Observation Group ID	[1] Standard Sample: STD	No
Sequence Step		No
Response		No
Technical Outlier	false	No

Figure 6. Multi-cell editing

- Assign dilutions to wells: From the  drop-down list, select **Sequence step** and assign the dilutions according to the following logic (dilution from left to right):

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
C		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
D		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
E		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
F		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
G		[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	[1] 1	[2] 0.5	[3] 0.25	[4] 0.125	[5] 0.0625	
H												

Figure 7. Assignment of dilutions to wells

- Save your document.

5 Acquire your data

Use the By Position editor to add your response values to the plate.

About this task

Note: In this example you manually acquire the data by copy and paste. For your daily work, we recommend you use one of the Data Acquisition Modules that are available for PLA 3.0.

Procedure

To acquire your data:

1. From the  drop-down list, select **Response**.
2. Copy and paste the following values:

Table 1. Response values

	2	3	4	5	6	7	8	9	10	11
B	0.722	0.707	0.655	0.607	0.512	0.71	0.75	0.69	0.664	0.506
C	0.734	0.734	0.713	0.628	0.507	0.732	0.731	0.618	0.618	0.348
D	0.717	0.674	0.663	0.524	0.354	0.704	0.715	0.638	0.56	0.381
E	0.711	0.635	0.633	0.499	0.361	0.713	0.701	0.651	0.598	0.504
F	0.731	0.717	0.664	0.61	0.52	0.716	0.715	0.684	0.669	0.518
G	0.709	0.711	0.666	0.547	0.343	0.705	0.697	0.625	0.559	0.393

Results: The response values in your table should now look like this:



The screenshot shows the By Position editor interface. At the top, there are controls for 'No Filter', 'Response' (selected), 'Sign (0)', and 'Open Externally'. Below this is a grid representing a 96-well plate. The columns are numbered 1 through 12, and the rows are labeled A through H. The data values from Table 1 are displayed in the grid, with each cell having a unique background color (e.g., blue for row B, green for row D, purple for row F). The values are: Row B: 0.722, 0.707, 0.655, 0.607, 0.512, 0.71, 0.75, 0.69, 0.664, 0.506; Row C: 0.734, 0.734, 0.713, 0.628, 0.507, 0.732, 0.731, 0.618, 0.618, 0.348; Row D: 0.717, 0.674, 0.663, 0.524, 0.354, 0.704, 0.715, 0.638, 0.56, 0.381; Row E: 0.711, 0.635, 0.633, 0.499, 0.361, 0.713, 0.701, 0.651, 0.598, 0.504; Row F: 0.731, 0.717, 0.664, 0.61, 0.52, 0.716, 0.715, 0.684, 0.669, 0.518; Row G: 0.709, 0.711, 0.666, 0.547, 0.343, 0.705, 0.697, 0.625, 0.559, 0.393.

Figure 8. Response values displayed in the By Position editor with grid colors assigned

3. Save your document.