



Process Intelligence for Manufacturing.

Derived Parameters: Hierarchy Manager

A derived parameter is a parameter created by applying a mathematical or string formula to an existing parameter or parameters. You can create a derived parameter in both **Hierarchy Manager** and **Table View** using the **Derived Data** dialog box.

To open the **Derived Data** dialog box in **Hierarchy Manager**:

In the left pane of the hierarchy tab, right-click a node under which you want to add a derived parameter and select **Add Derived Parameter**. The **Derived Data** dialog box displays.

Derived Data dialog box fields:

Parameter Name field - Enter a name for the new derived parameter.

Parameter Type drop-down - Select whether this is a numeric or string parameter.

Offset Group drop-down - (for derived continuous parameters only) Select an offset group from the list.

Mathematical Expression:

Formula field - Create a mathematical formula for the new parameter. To create a formula, you may:

- Double-click the mathematical operators shown above the **Formula** field to include them in the formula. AND/OR
- Choose one or more of the available functions to add them to your formula (see **Math Functions** list below).

Open Formula button - Click to use a previously saved mathematical expression.

Save Formula button - Click to save a mathematical expression for future use.

Clear Formula button - Click to clear all fields associated with creating a mathematical expression.

Math Functions list - Math functions are standard mathematical or string operators you can use to create new parameters. Click to select them, then click the **Add to**

Formula button to insert them in the formula above. You must substitute a value or parameter for the term in parentheses.

Note: All derived data functions accept null values in expressions where they are supported as constants.

Parameter Name - Use one or more existing parameters as a basis for the new parameter.

If you are deriving data from a discrete parameter, select the parameter(s) from the **Parameter Names** list. Summary parameters are grouped within folders of the same name of the parameter on which they are based. To insert a parameter into the formula above, select it then click the **Add to Formula** button.

If you are deriving data from a continuous parameter, select the parameter(s) in the **Parameter Names** box. To insert a parameter into the formula above, select it then click the **Add to Formula** button.

Note: Parameters may be selected from different nodes within the same hierarchy Universe.

Replicate groups that are used as inputs will return a single value (not to be confused with individual Replicate Parameters). E.g. "Dissolution" vs "Dissolution_2."

Discrete Parameters are available for use in Derived Continuous Parameters. The discrete parameter value is applied as a constant value across all timestamps for each individual Parameter Set. The Discrete Parameter tree is not presented for continuous derived parameters.

To add a Discrete Parameter, Continuous Summary Parameter (e.g., "pH_min"), Replicate Index or Replicate Summary Parameters (e.g., "Analytical Data.Dissolution (15min)_1" or "Analytical Data.Dissolution(15min)_mean") to the Continuous function, type the parameter name directly into the function. The Parameter name must match exactly (case, etc.) the parameter name in the Analysis Group .

Retrieving the Nth Value feature

To retrieve the Nth value from a Continuous parameter, the **InVision** syntax is "<Parameter_Name>_N". For example, "pH_1" retrieves the first pH value for each Parameter Set, and "RPM_5" retrieves the 5th value.

In **Hierarchy Manager**, the syntax is "<Parameter_Name>,N,<Parameter ID>". For example, "Temp,4,1390" retrieves the 4th value from the Hierarchy Parameter "Temp" identified by parameter definition ID 1390.

If any values or data points are null or do not exist (e.g. parameter definition ID 1390 does not exist in the hierarchy) the Derived Parameter will create as null.

Add to Formula buttons - Click to add your selection to the formula.

OK button - Click to create the new parameter and close this dialog box.

Apply - Click to create the new parameter and leave this dialog box open.

Cancel button - Click to close this dialog box without creating a new parameter.