

Description: Guide to configuration of Expressions in Unified Data Manager

OS Requirement: Win 2000, XP Pro, Server 2003, Vista, Server 2008, Windows 7

General Requirement: N/A

Introduction

The Unified Data Manager (UDM) enables the centralized management of commonly used expressions, value sets, groups, alarm subscriptions, filters, recipes and event triggers across GENESIS32 and BizViz products. This document will help you understand global expressions from the configuration point of view and will demonstrate how they are used.

In order to get global overview of all UDM functions you can see other application notes about this tool or the UDM whitepaper.

Expressions

You can create expressions in the UDM and use it in all other ICONICS applications. Each global expression is implemented as a single expression data tag, which recalculates on input values or on trigger data tags. Client applications can access these expression data tags as read/write data tags. Expressions can also accept parameters.

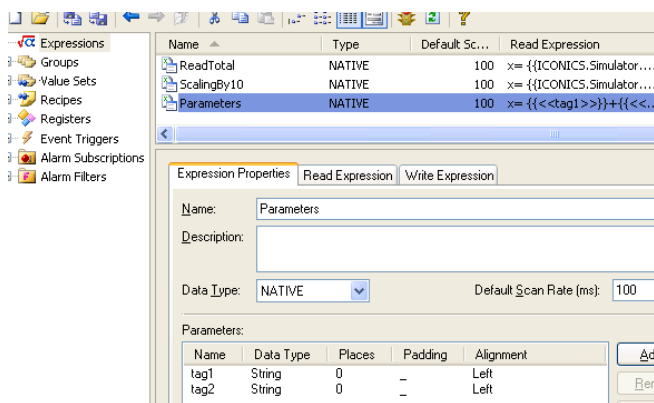


Figure 1 - Expressions in the UDM

Creating a New Expression

1. Launch the Unified Data Manager by going to Start → Programs → ICONICS Tools → Unified Data Manager.
2. Create a new configuration database by going to File → New.
3. Follow the configuration wizard to create an MS Access or MS SQL configuration database.
4. You should now have a new configuration database.
5. In the tree-control in the left-hand pane, right-click on Expressions and select New → Expression Item

NOTE: You can select to create a new Folder instead of a new Expression Item. Folders are used to logically organize the expressions.

Simple Read Expression

First, we will create a simple expression, which calculates a sum of three data points (e.g. ramp, ramp2, ramp3).

1. Once you have created the expression, select the **Read Expression** tab and click open the Expression Editor.

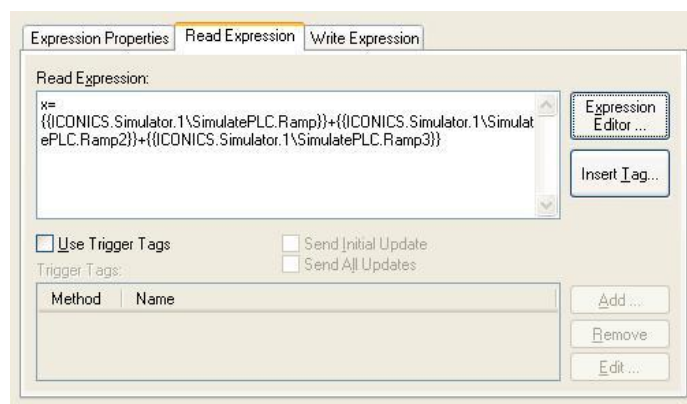


Figure 2 - Global Expression: Read Expression Tab

2. Write the point names enclosed with double curly brackets **{{ }}** or browse them one by one via **Tags** button, which opens **ICONICS Unified Data Browser (UDB)**, and join them with addition sign **“+”**.

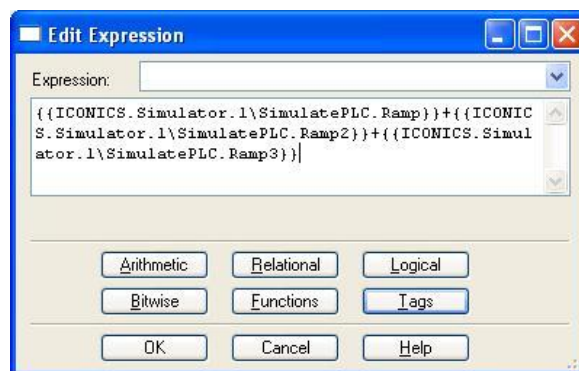


Figure 3 - Expression Editor

NOTE: You can also specify a tag to enable/disable this expression based upon a certain condition that you can specify if you check Use Trigger Tags check box.

Using the Expression

1. Launch GraphWorX32 by going to Start → Programs → ICONICS GENESIS32 → GraphWorX32 → GraphWorX32.
2. Insert a Process point and open the ICONICS Unified Data Browser via **Data Tags...** button.

- Under **UDM Data** tab browse for the name of your expression

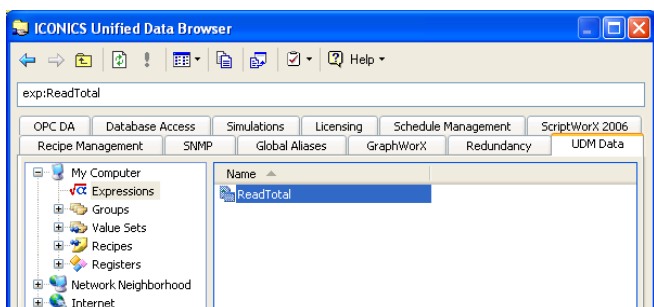


Figure 4 - Expression in Unified Data Browser

- Enter Runtime and you will see results of the calculation

NOTE: You can always recognize a global expression point by “exp:” prefix in the point name.

Read/Write Expression Used for Scaling

One of the most common uses of global expressions is scaling and conversion of values. In this section we will show how to create an expression that will scale an OPC Tag value by 10.

- Create a new expression
- Under the **Read Expression** tab, open the Expression Editor and select a Read/Write point via UDB. You will see its syntax in double curly brackets. Append “/10” string at the end of the line. This expression will divide a value that comes from the selected source by 10.
- Open **Write Expression** tab and check **Enable Write Expression** check box.
- In the Expression Editor, select **Input value** under Tags menu or enter manually the keyword **{{input}}**. Append “*10” string at the end of line. This expression will multiply operator’s input by 10.

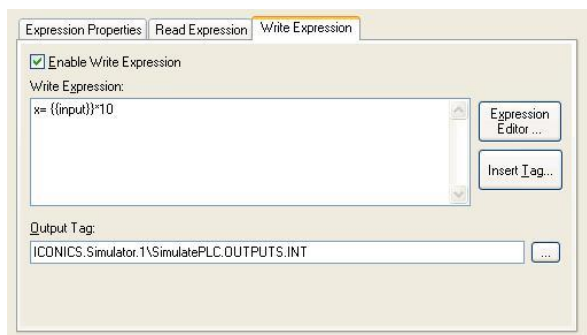


Figure 5 - Global Expression: Write Expression

- Fill Output Tag line with the name of the point you selected at point 2 or browse for it via the “...” button.

NOTE: You should bear in mind that you can only output to a single point. If you use a complex **write** calculation involving more tags, you can select only a single point where the result will be stored.

- The expression is ready for use.

NOTE: When testing this expression, it is useful to insert two process points. One shows this expression. The second shows the original selected point.

Expression with Parameters

Also, more complicated expressions can be created which take multiple parameters in its calculations. We will use two parameters standing for two points, which users will select when using this expression. In this example, we will use simple addition of two values but usually we take advantage of the global expression with parameters when there is a complicate calculation.

- Create a new expression.
- Add two string parameters tag1 & tag2
- Under Read Expression tab fill in expression:

$x = \{ \{ \langle \text{tag1} \rangle \} \} + \{ \{ \langle \text{tag2} \rangle \} \}$

NOTE: When referring to a parameter, its name must be enclosed by `<< >>`.

- The expression is ready for use. But you should note that you need to substitute the parameters with point names in your client. You can substitute the parameters between double inverted commas right after you have selected the expression in UDB.

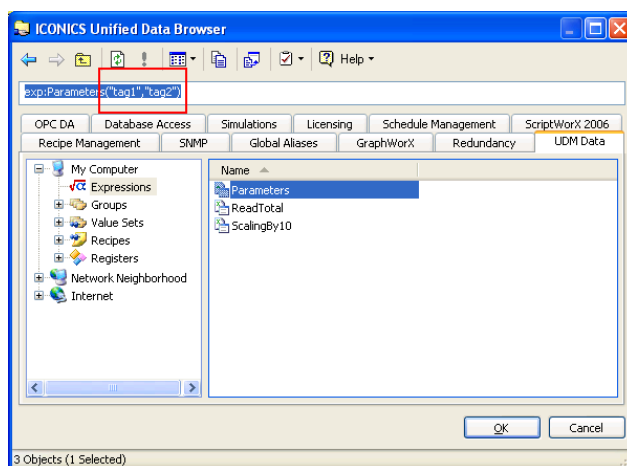


Figure 6 - Global Expression with Parameters

NOTE: Parameters can be used in all previous examples instead of constants.