Long Delay

Overview

The **Pac_Dec_Delay** component allows generating delays of up to 4800 samples.

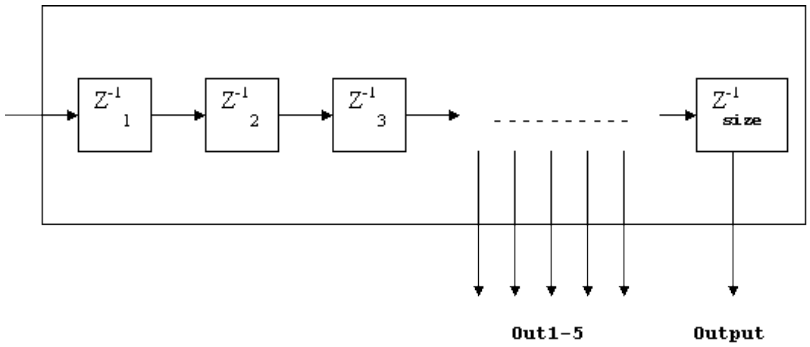

Figure 1: Delay line in the figure assumes `Dec`= 1 and `Pack` =1

Description

The delay line is a flexible component with 1 to 6 outputs. This component buffers 600 words of 32-bit data memory to generate delay. The **`Size`** property can be set to a maximum of 600.

`Dec` specifies the decimation factor n either of 1, 2, 3 or 4 – where decimation by n means taking every n^{th} sample and sending it out n times and skipping rest (n-1) samples. Decimation by 1 means no decimation and decimation by 4 means repeating sample number 1 four times and ignoring sample 2, 3 and 4.

`Pack` specifies the number of samples in one 32 bit data word, can be either 1 or 2. 1 means a single 32 bit sample and 2 means two 16 bit samples in one 32 bit data memory location.

`OutputChannels` specifies the total number of outputs. **Pac_Dec_Delay** component can be configured to have any where from 1 to 6 total outputs. The last one always gives the maximum delay which is (**`Size`** * **`Pack`** * **`Dec`** – **`Dec`**).

The other 5 delay outputs **`Out1`**, **`Out2`**, **`Out3`**, **`Out4`**, **`Out5`** can be placed anywhere by the setting its value in the properties window. Their values should follow the following rule:

1. The Maximum Delay is (**`Size`** * **`Pack`** * **`Dec`** – **`Dec`**).
   If the value of Outputs is set to a value greater than Maximum delay then it results in a buid error which looks some thing like this
   Error: aic_gen.asm(729): Address Expected : Pac_Dec_Delay_1_x(n-1000) - must be a Data variable reference or a hex, decimal, or binary integer

2. The value of Outputs should be a multiple of **`Dec`**.

The **`Size`** should also be a multiple of both **`Dec`** and **`Pack`**.

Configurable Properties (Design time)

Property	Description
Size	Number memory locations in Delay Line. Range: 1 to 600
OutputChannels	Number of output channels. Range: 1 to 6
Dec	Decimation Factor. Range: 1 to 4
Pac	Packing factor. Range: 1 to 2
Out1:5	Location of Output 1, 2, 3, 4 and 5. Range: 1 to (**Size** * **Pack** * **Dec** – **Dec**). The 6th output is always at (**Size** * **Pack** * **Dec** – **Dec**)

I2C Interface

None.