IIR Filter PtByPt VI

Owning Palette: Filters PtByPt VIs

Installed With: Full Development System

Filters x using the direct form IIR filter specified by Reverse Coefficients and Forward Coefficients.

This VI is similar to the IIR Filter VI.

Details

Place on the block diagram Find on the Functions palette

initialize, when TRUE, initializes the internal state of the VI.

x is the input signal to filter.

Reverse Coefficients is the reverse coefficients of the filter design. This VI does not place any restrictions on the coefficient arrays. If both coefficient arrays are empty, the VI performs no filtering and sets Filtered X to the value of X.

Forward Coefficients is the forward coefficients of the filter design.

Filtered x contains the result of filtering the input sequence x by convolution.

error returns any error or warning from the VI. You can wire error to the Error Cluster From Error Code VI to convert the error code or warning into an error cluster.
IIR Filter PtByPt Details

The IIR Filter PtByPt VI obtains the elements of Filtered X using the following equation.

\[ y_j = \frac{1}{a_0} \left( \sum_{j=0}^{N_b-1} b_j x_{j-j} \right) - \sum_{k=1}^{N_a-1} a_k y_{j-k} \]

where \( Y \) is Filtered X, \( N_b \) is the number of Forward Coefficients, \( b_j \) is Forward Coefficients, \( N_a \) is the number of Reverse Coefficients, and \( a_k \) is Reverse Coefficients.

Note  You can use the IIR Filter PtByPt VI to perform FIR filtering by passing an empty array into Reverse Coefficients.