BiQuadFade

Overview

BiquadFade automatically fades from one set of filter coefficients (A) to another set of filter coefficients (B). Transition time for this fading is specified by user.

Description

Filter starts in an all pass condition.

User needs to load the coefficients for the B filter before enabling the transition. The write state button should be clicked twice for each disabling of the TransferEnable flag so that each component coefficient buffer gets reset.

Transition can be enabled and disabled during run-time by setting number "0x800000" (Enable) and "0"(Disable) for the parameter TransferEnable in the runtime properties window. When starting transition, the output of **BiquadFade** will equal to the weighted sum of A filter's output and B filter's output. The proportion of A filter output will linearly ramp down (faded) from 100% to zero and the proportion of B filter output will linearly ramp up from zero to 100%.

The Transition time window can be set as 0 sample, 1024 samples, 2048 samples, 4096 samples or 8192 samples for all sampling rates (32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176kHz and 192kHz).

When transition is completed the component copies all coefficients of B filter to A filter memory. Also **BiquadFade** component resets TransferEnable flag to zero.

While using GDE the flag TransferEnable should be reset to "0"(Disable) before fading to another set of filter coefficients. Once the TransferEnable flag is reset coefficients of new filter should be loaded to B filter memory and then TransferEnable flag should be set to "0x800000" (Enable) to initiate the fading.

Configurable Properties

Property	Description
TransferEnable	The flag to trigger the transition from A Biquad filtering to B Biquad filtering, must be reset before subsequent transitions
B_B0	The B0 Coefficient for the Biquad B
B_B1	The B1 Coefficient for the Biquad B
B_B2	The B2 Coefficient for the Biquad B
B_A1	The A1 Coefficient for the Biquad B
B_A2	The A2 Coefficient for the Biquad B

I2C Interface

The I2C interface to Biquad is as follows:

I2C Address	DSP Memory Address	Size	Description
I2CAddress1	DspCoefBlockStart1	4 bytes	Flag to trigger the transition from A Biquad filtering to B Biquad filtering
I2CAddress2	DspCoefBlockStart2	20 bytes	Coefficients B0, B1, B2, A1, A2 for Biquad B

Usage

The **`BiQuadFade`** component can be used when all filter coefficients needs to be changed during one sample interval or when transition from one filter to another needs to done smoothly.