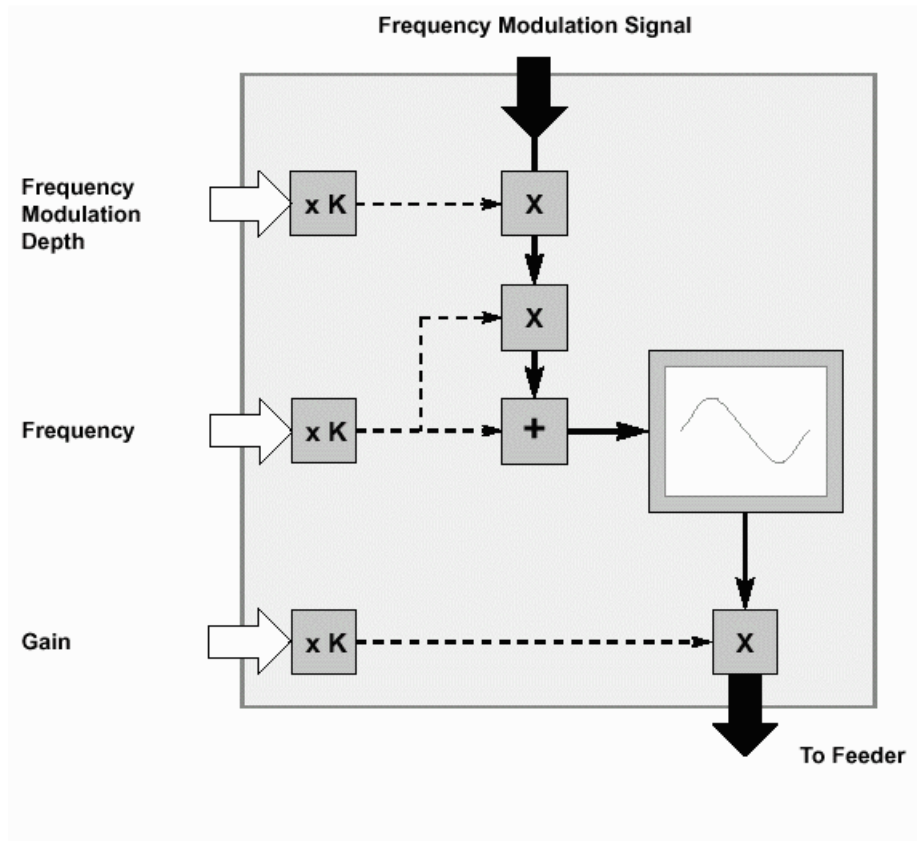
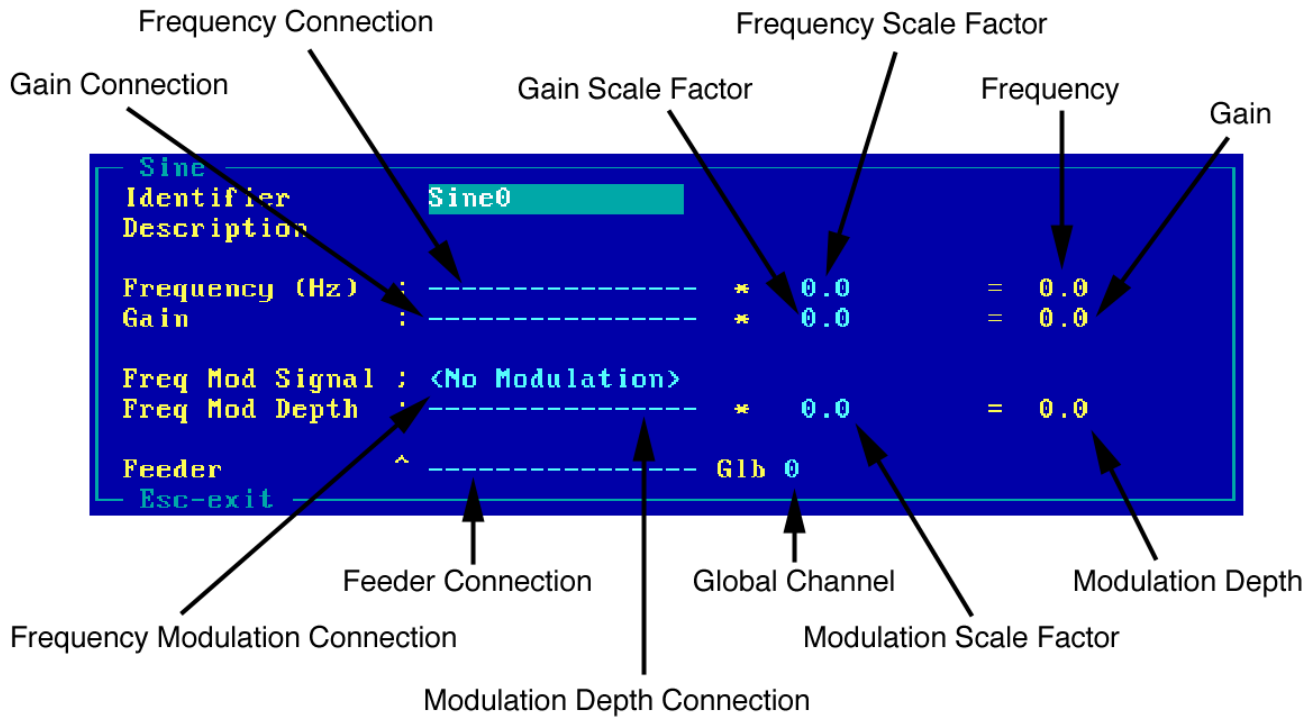


Basic Signals

Sine Wave Signal



This signal source produces a sinusoidal wave signal, which can be mixed in any proportion on any of the analog output channels. Both amplitude and frequency can be controlled by input variables from elsewhere in the model, or from the host interface. The frequency can also be modulated by another signal within the signal processor, with the model having control over the depth of modulation. This is shown diagrammatically above. Minimum requirement to achieve a usable signal are non-zero values set for the frequency and gain fields.



Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value or if no frequency connection, a fixed frequency value.

Frequency

Frequency (in Hertz) of sine wave generated by waveform synthesizer. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value or if no gain connection, a fixed gain value.

Gain

Amplitude gain of sine wave. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

Frequency Modulation Connection

Connection to the frequency modulating signal, which is scaled by the modulation depth and added to the frequency.

Modulation Depth Connection

Control object connection to provide frequency modulation depth control from elsewhere in model.

Modulation Scale Factor

Scaling factor for frequency modulation depth control value.

Modulation Depth

Frequency modulation depth value, controls the effect of the frequency modulation signal:

$$\text{ActualFreq} = \text{Freq} \times (1 + (\text{ModDepth} \times \text{ModSignal}))$$

Usually it falls in the range 0 to 1.0, when used in conjunction with a unity gain modulation signal. Note: To avoid unpredictable behavior care should be taken to ensure that the product of modulation depth and modulation signal does not span a range greater than -1.0 to +1.0.

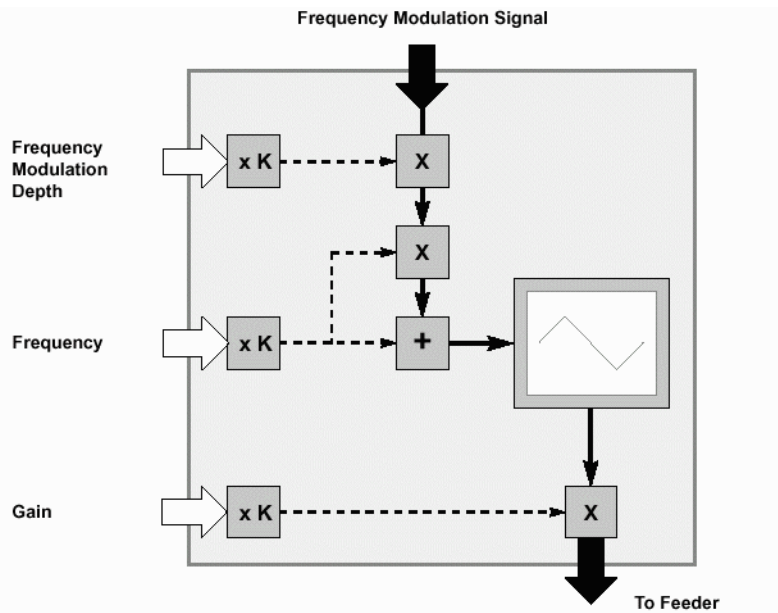
Feeder Connection

Connection to a feeder, which adds the sine wave into the signal highway.

Global Channel

Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for details.

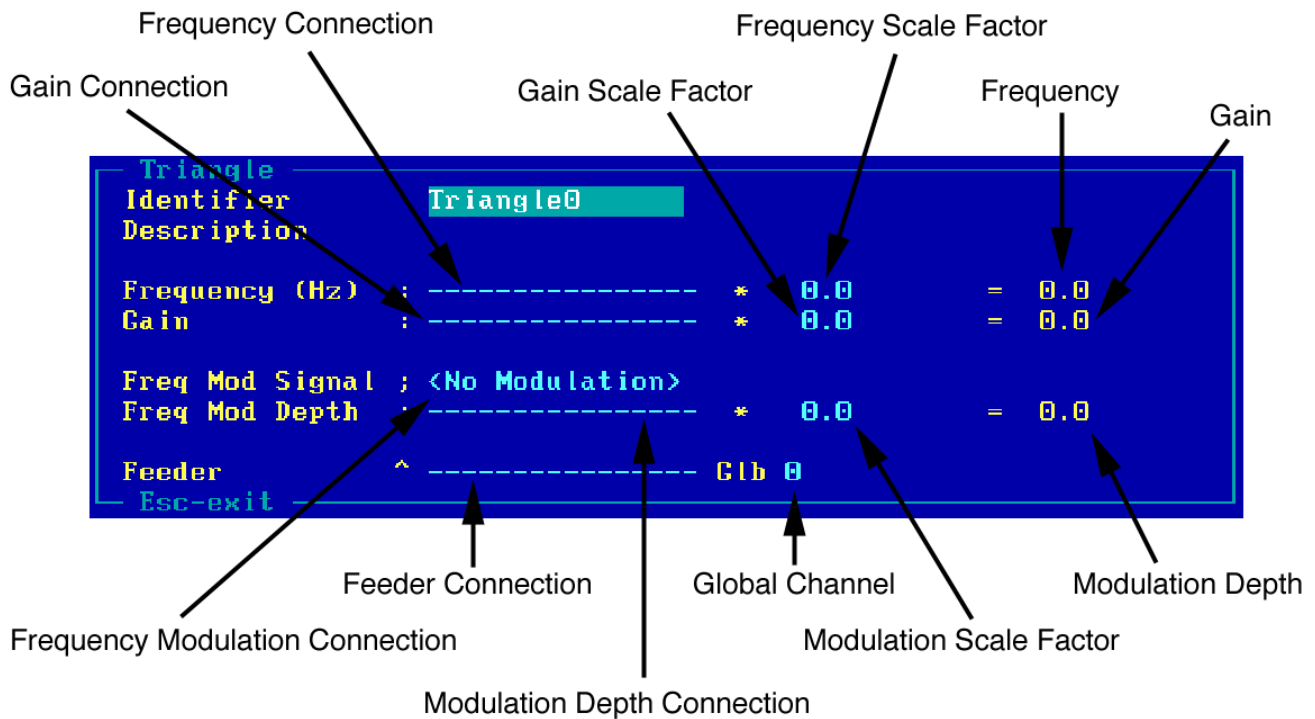
Triangle Wave Signal



$$\text{ACTUAL FREQUENCY} = \text{FREQUENCY} (1 + (\text{FREQ MOD DEPTH} \times \text{FREQ MOD SIGNAL}))$$

This signal source produces a triangle wave signal that can be mixed in any proportion on any of the analog output channels. Both amplitude and frequency can be controlled by input variables from elsewhere in the model, or from the host interface. The frequency can also be modulated by another signal within the signal processor, with the model having control over the depth of modulation.

The triangle wave is identical in operation to the sine wave, and requires non-zero values for frequency and gain (as a minimum) to produce a usable signal.



Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value or if no frequency connection, a fixed frequency value.

Frequency

Frequency (in Hertz) of triangle wave generated by waveform synthesizer. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value or if no gain connection, a fixed gain value.

Gain

Amplitude gain of triangle wave. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

Frequency Modulation Connection

Connection to the frequency modulating signal, which is scaled by the modulation depth and added to the frequency.

Modulation Depth Connection

Control object connection to provide frequency modulation depth control from elsewhere in model.

Modulation Scale Factor

Scaling factor for frequency modulation depth control value.

Modulation Depth

Frequency modulation depth value, controls the effect of the frequency modulation signal:

$$\text{ActualFreq} = \text{Freq} \times (1 + (\text{ModDepth} \times \text{ModSignal}))$$

Usually it falls in the range 0 to 1.0, when used in conjunction with a unity gain modulation signal. Note: To avoid unpredictable behavior care should be taken to ensure that the product of modulation depth and modulation signal does not span a range greater than -1.0 to +1.0.

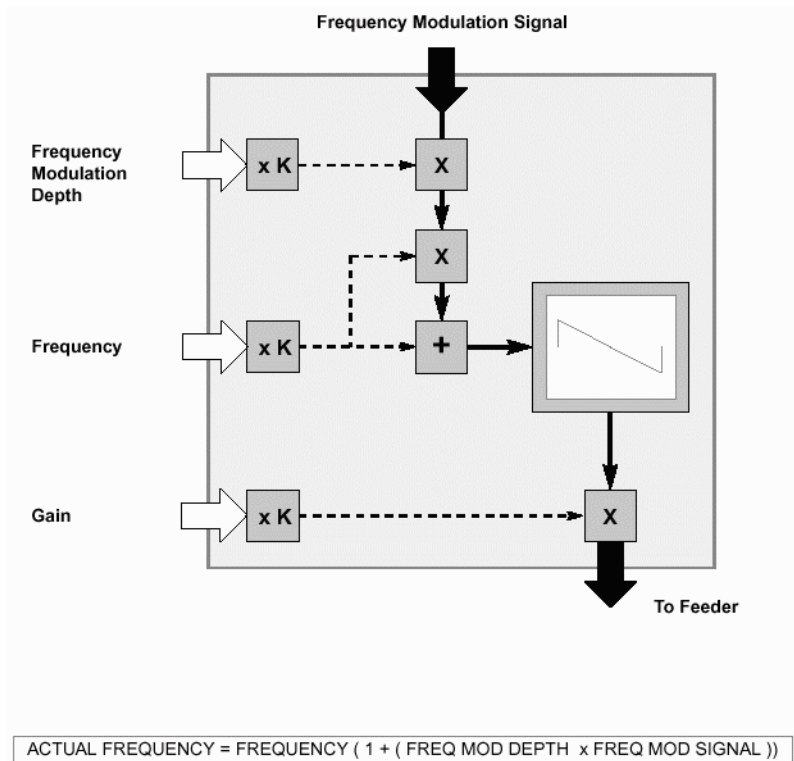
Feeder Connection

Connection to a feeder, which adds the triangle wave into the signal highway.

Global Channel

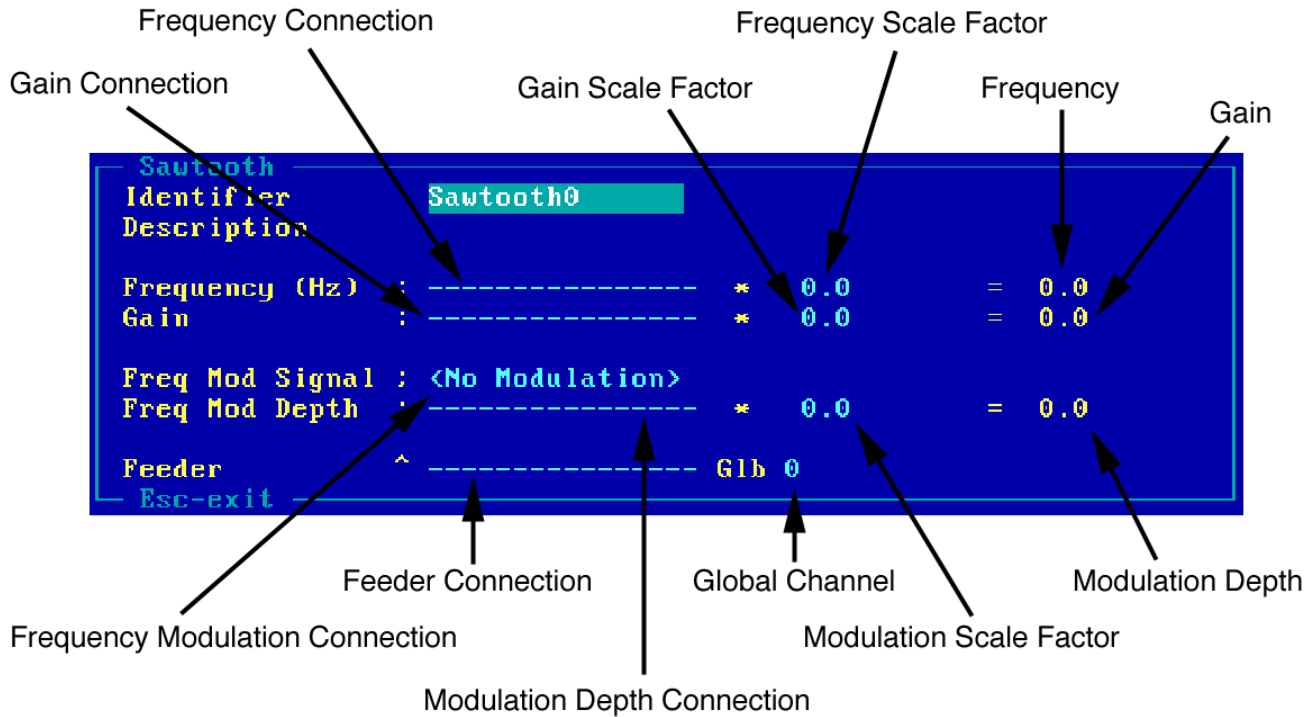
Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for details.

Sawtooth Wave Signal



This signal source produces a sawtooth wave signal that can be mixed in any proportion on any of the analog output channels. Both amplitude and frequency can be controlled by input variables from elsewhere in the model, or from the host interface. The frequency can also be modulated by another signal within the signal processor, with the model having control over the depth of modulation.

The sawtooth wave is identical in operation to the sine wave, and requires non-zero values for frequency and gain (as a minimum) to produce a usable signal.



Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value or if no frequency connection, a fixed frequency value.

Frequency

Frequency (in Hertz) of sawtooth wave generated by waveform synthesizer. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value or if no gain connection, a fixed gain value.

Gain

Amplitude gain of sawtooth wave. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

Frequency Modulation Connection

Connection to the frequency modulating signal, which is scaled by the modulation depth and added to the frequency.

Modulation Depth Connection

Control object connection to provide frequency modulation depth control from elsewhere in model.

Modulation Scale Factor

Scaling factor for frequency modulation depth control value.

Modulation Depth

Frequency modulation depth value, controls the effect of the frequency modulation signal:

$$\text{ActualFreq} = \text{Freq} \times (1 + (\text{ModDepth} \times \text{ModSignal}))$$

Usually it falls in the range 0 to 1.0, when used in conjunction with a unity gain modulation signal. Note: To avoid unpredictable behavior care should be taken to ensure that the product of modulation depth and modulation signal does not span a range greater than -1.0 to +1.0.

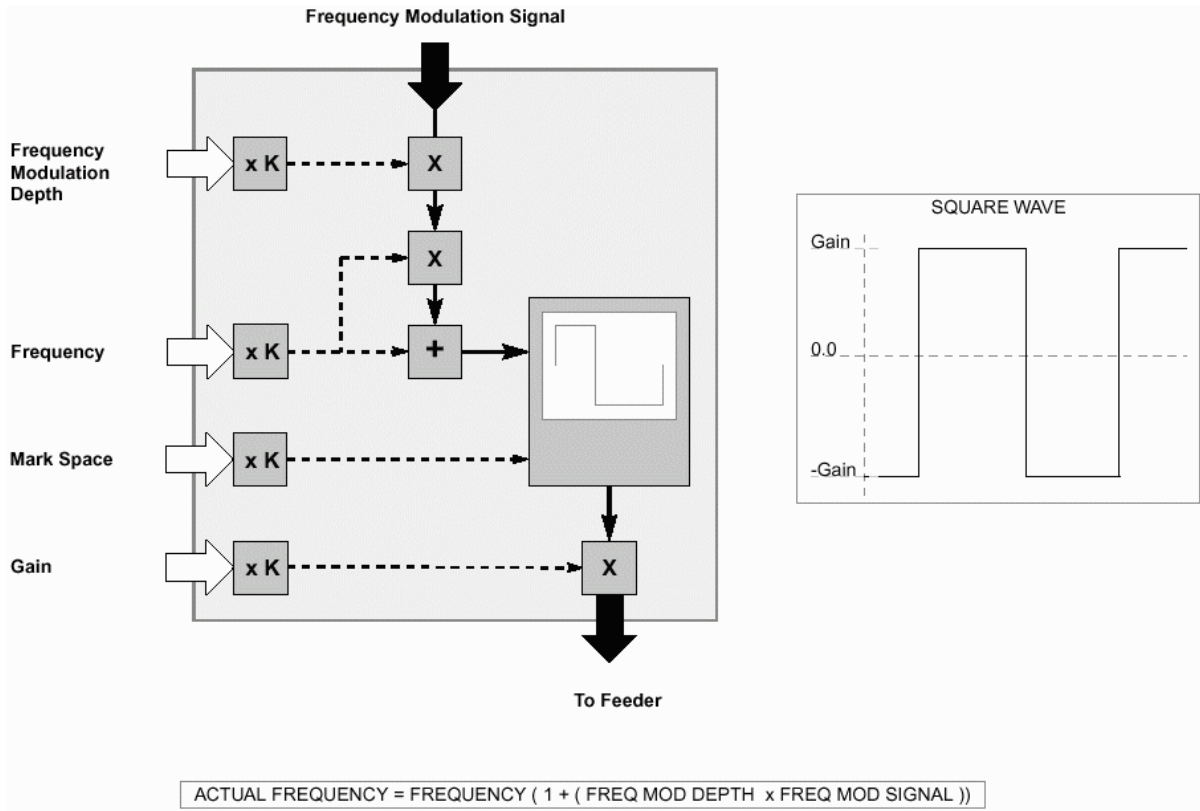
Feeder Connection

Connection to a feeder, which adds the sawtooth wave into the signal highway.

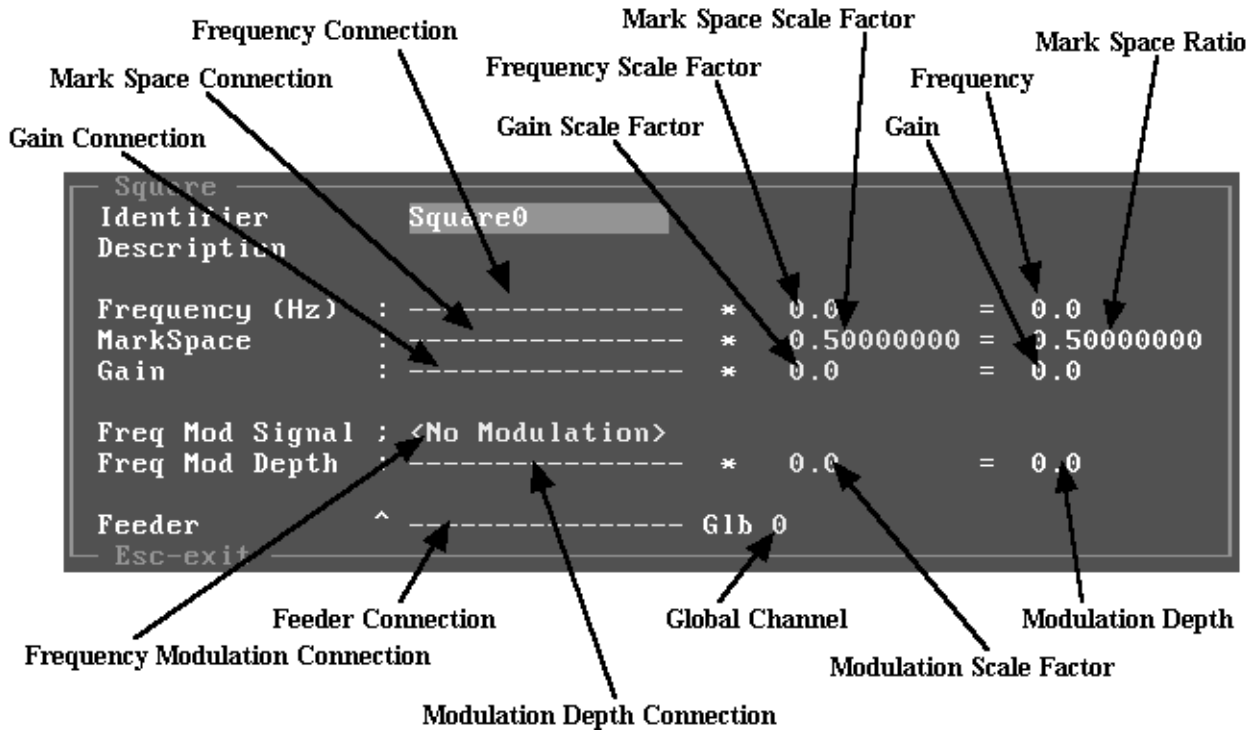
Global Channel

Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for details.

Square Wave Signal



This signal source produces a square wave signal that can be mixed in any proportion on any of the analog output channels. Both amplitude, frequency and mark/space ratio (duty cycle) can be controlled by input variables from elsewhere in the model, or from the host interface. The frequency can also be modulated by another signal within the signal processor, with the model having control over the depth of modulation. Non-zero values for frequency and gain are required (as a minimum) to produce a usable signal.



Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value or if no frequency connection, a fixed frequency value.

Frequency

Frequency (in Hertz) of square wave generated by waveform synthesizer. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Mark Space Connection

Control object connection to provide mark space control from elsewhere in model.

Mark Space Scale Factor

Scaling factor for mark space ratio control value.

Mark Space Ratio

Mark to space ratio for square wave. Value ranges from 0 to 1.0 with 0 being all space, 1.0 being all mark. If the M/S connection is blank then the M/S scale factor is used as the value; otherwise the M/S is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value or if no gain connection, a fixed gain value.

Gain

Amplitude gain of square wave. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

Frequency Modulation Connection

Connection to the frequency modulating signal, which is scaled by the modulation depth and added to the frequency.

Modulation Depth Connection

Control object connection to provide frequency modulation depth control from elsewhere in model.

Modulation Scale Factor

Scaling factor for frequency modulation depth control value.

Modulation Depth

Frequency modulation depth value, controls the effect of the frequency modulation signal:

$$\text{ActualFreq} = \text{Freq} \times (1 + (\text{ModDepth} \times \text{ModSignal}))$$

Usually it falls in the range 0 to 1.0, when used in conjunction with a unity gain modulation signal. Note: To avoid unpredictable behavior care should be taken to ensure that the product of modulation depth and modulation signal does not span a range greater than -1.0 to +1.0.

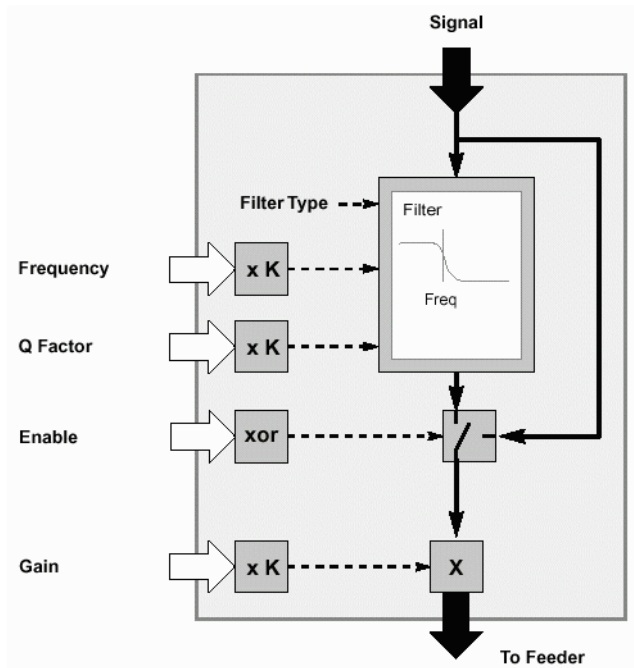
Feeder Connection

Connection to a feeder, which adds the square wave into the signal highway.

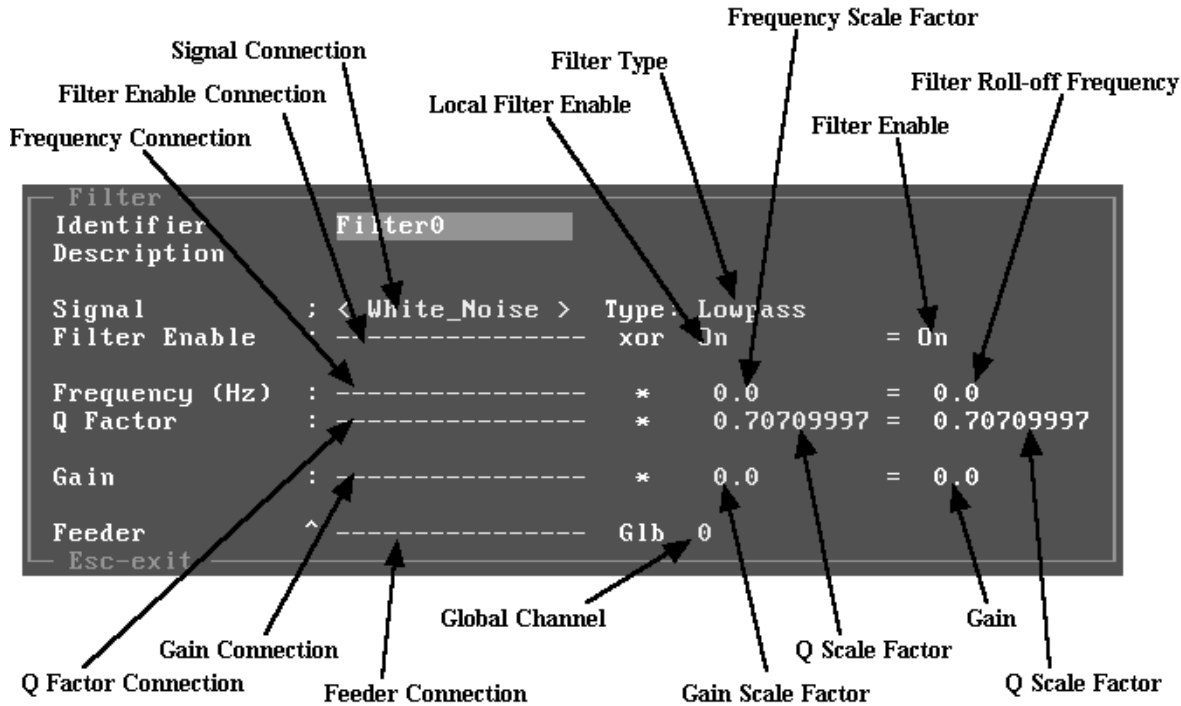
Global Channel

Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for details.

Filter Signal



This signal source produces a filtered copy of the selected signal, which can be mixed in any proportion on any of the analog output channels. The type of filtering can be selected from low-pass, band-pass or high-pass. The filter quality factor, roll-off frequency, and gain can be controlled by input variables from elsewhere in the model, or from the host interface. The default signal is the internal pseudo random noise source, providing an improved noise source with better tunability.



Signal Connection

Connection to the signal to be used as input to the filter. Deleting this connection selects the default internal white noise generator.

Filter Type

Selects a two pole filter type from; Low-pass, Band-pass, High-pass, Low-passQ, Band-passQ, High-passQ, Notch or AllPass. The three Q filters are amplitude adjusted such that the filter has unity gain at the roll-off frequency, and maintains this gain as the quality factor is increased. The band-pass filters have the low-pass and high-pass poles at the same roll-off frequency.

Filter Enable Connection

Control object connection to provide filter enable control from elsewhere in model.

Local Filter Enable

Local value for the filter enable. If an enable connection is made then this provides an exclusive or function for inverting the enable control state

Filter Enable

The current filter enable state, when On the filter will be active, when Off the signal will be passed through with gain control only.

Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value.

Frequency

Roll-off frequency (in Hertz) of filter. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Q Factor Connection

Control object connection to provide quality factor control from elsewhere in model.

Q Scale Factor

Scaling factor for Q factor control value.

Q Factor

Quality factor for filter. If the Q factor connection is blank then the Q scale factor is used as the Q value; otherwise the Q is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value.

Gain

Amplitude gain of filtered source. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

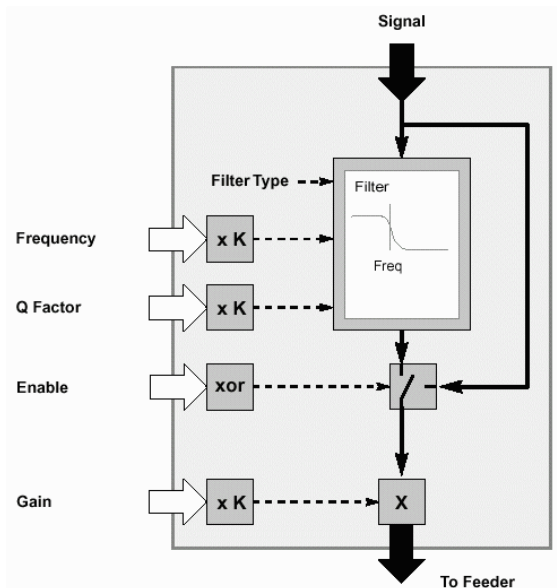
Feeder Connection

Connection to a feeder, which adds the filtered source into the signal highway.

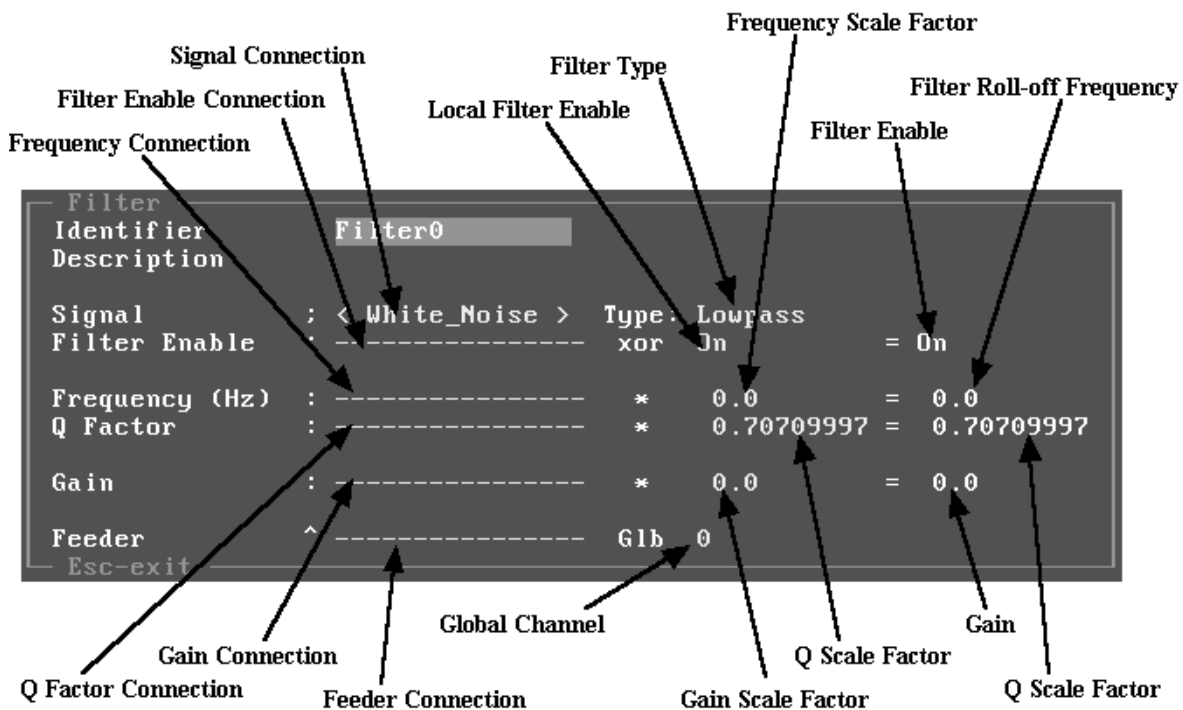
Global Channel

Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for details.

Parametric Filter Signal



This signal source produces a filtered copy of the selected signal, which can be mixed in any proportion on any of the analog output channels. The filtering can be selected to either boost or attenuate the desired frequency across the specified bandwidth. The filter bandwidth, center frequency, and gain can be controlled by input variables from elsewhere in the model, or from the host interface. The default signal is the internal pseudo random noise source, providing an improved noise source with better tunability.



Signal Connection

Connection to the signal to be used as input to the filter. Deleting this connection selects the default internal white noise generator.

Filter Enable Connection

Control object connection to provide filter enable control from elsewhere in model.

Local Filter Enable

Local value for the filter enable. If an enable connection is made then this provides an exclusive or function for inverting the enable control state

Filter Enable

The current filter enable state, when On the filter will be active, when Off the signal will be passed through with gain control only.

Frequency Connection

Control object connection to provide overall frequency control from elsewhere in model.

Frequency Scale Factor

Scaling factor for frequency control value.

Frequency

Center frequency (in Hertz) of filter. If the frequency connection is blank then the frequency scale factor is used as the frequency value; otherwise the frequency is the scale factor times the output result of the control object.

Gain Connection

Control object connection to provide amplitude gain control from elsewhere in model.

Gain Scale Factor

Scaling factor for gain control value.

Gain

Amplitude gain of filtered source. If the gain connection is blank then the gain scale factor is used as the gain value; otherwise the gain is the scale factor times the output result of the control object.

Feeder Connection

Connection to a feeder, which adds the filtered source into the signal highway.

Global Channel

Connection to a Global Channel. If this field is non-zero, the same sound that gets sent to the feeder connection will be sent to the global channel, where other models running on other DSP boards can pick it up. See the section on Global Channels for detail

Boost/Cut Gain

Control object connection to provide filter gain parameter control from elsewhere in model.

Boost/Cut Scale Factor

Scaling factor for Boost/Cut control value.

Boost/Cut

The level of signal gain or attenuation to be provided across the bandwidth. If the Boost/Cut connection is blank then the Boost/Cut scale factor is used as the Boost/Cut value; otherwise the result is the scale factor times the output result of the control object.

Bandwidth

Control object connection to provide quality factor control from elsewhere in model.

Bandwidth Scale Factor

Scaling factor for Q factor control value.

Bandwidth

Quality factor for filter. If the Q factor connection is blank then the Q scale factor is used as the Q value; otherwise the Q is the scale factor times the output result of the control object.