BlueSynth Example

Return To Main Table Of Contents

To help you understand how some of Creamware's synths were designed, we've included basic information on elements of the Blue Synth and Inferno synthesizers. Here's some comments on the Blue Synth.

When you first double-click on the BlueSynth device, you should see an arrangement of modules as shown above. The module you want is called 'Layout'. Double-clicking on this will get you to the entire layout of the BlueSynth. It's too large for a one-page overview, so we will look at it in two sections. As we go through the explanation, we suggest you keep the front panel (BlueSynth surface) open for frequent referral.

The BlueSynth has the following architecture: 4 LFOs, 3 multimode oscillators, 3 envelopes, and 1 filter. So, in this picture you will see a lot of repetition of modules. Let's try to break down this view into smaller sections. The section you see at the bottom with 4 AsyncSwitches, etc., is for running each of the 4 LFOs from a MIDI Clock source, with variable divisions of clocks per LFO possible.

ADSR Pitch EG 5
Gate to Gate mode
Switch
Mult Mode Osc 6
Multi Mode Osc 6
Out
Out
Out

The Midi Timing Clock Filter 3 strips the MIDI stream of all but clock-related data (clock, start/stop, etc.). That data stream is sent to the DeltatoBPM32Th (converting pulses to Beats Per Minute), then on into the FreqDivider2Th, which sub-divides the pulses depending on the MIDI Clock Divider values selected in the GLOBAL drawer of the front panel. The AsyncSwitch4 determines if the attached LFO will get its frequency (rate) from a front panel knob or the Divider.

Here are the 4 LFOs on the left (LFO V2b), which are routed to a special matrix Switch allowing selection of any one LFO at each of 5 destinations. Notice only the bottom LFO has a Mix1 before going into the Switch. This LFO is called the LFO4 MW (Mod Wheel), as the Mix1 Gain is controlled by MIDI Mod Wheel controller data. Each of the matrix Switch's outputs is fed through a Mix1 module, providing for LFO Depth control at each of the 5 destinations.

The module x Gate to Gate conditions the Gate signal from the MVC so that, when Retrigger for an LFO is set to ON, the LFOs' phase will reset correctly in polyphonic operation. The ADSR Pitch EG 5 is used for the Pitch Envelope for all 3 oscillators. It's connected to a Key Level Easy for keytracking, a Vel Amt for velocity response, a SSwitch to select normal or inverted ADSR, and a Mix1 for final amount. This next section shows the 3 Multi Mode Oscillators and their associated pitch modulation controls. Each oscillator has its own Pitch Mod block (PM 2C2 R5) and Coarse/Fine tuning control (CoFiPeP3). There is a single ADSR Pitch EG for pitch modulation, (which is pictured on the previous page, above the LFOs - the ADSR Pitch EG shown here goes to the Filter Cutoff). The Pitch EG for the oscillators is fed to a SSwitch module (here labeled PEnv On/Off) that determines whether or not the oscillator will receive ADSR pitch modulation (set by a button on the front panel).Each Pitch Mod block is set up as follows: frequency (f) is connected to the MVC Freq out, Mod 1 input receives the LFO modulation matrix, Mod 2 input receives the Pitch ADSR, C1 input receives the Coarse/Fine tuning offset, and C2 receives Aftertouch from the AT am 3 (Aftertouch Amount 3). Since M1 and M2 require synchronous signals, C1 and C2 require asynchronous controls, and we did not need scaling (as all of the mod sources are scaled before they arrive at the Pitch Mod block), the Pitch Mod block 2C2 R5 was selected for this application.

The outputs of the oscillators are fed into a Mix3 mixer.

Now let’s look at the last section:

To complete the BlueSynth, here is the filter, envelope (ADSR), and output section. The combined output of the 3 oscillators from the Mix3 goes into the Low Pass Filter 24 dB. From there it passes through the LVA for amplitude shaping, and then through the Volume Modulator 1 (VM R1), ending with the required module for polyphony, Mixer 16.

Volume Modulator 1 provides for a way to control the overall amplitude of the signal after being shaped with the ADSR v EG5 and LVA combination. The M1 input connects to the LFO mod source, and the M2 input connects to Aftertouch. The green and gray pots are set to maximum value for C1 and C2 to ”open up” the Volume

The ADSR v EG5 is the ”vintage” ADSR. It provides for independently variable slopes for both Attack and Decay/Release (the ATSl and DRSl pads). Again, notice that both red knobs are set to the same maximum value* (so we could use only one here), but we wanted to have the ability to change the slopes separately for experimentation. The Attack slope varies from linear to log, and the Decay/Release slope varies from linear to exponential. Note: the values set on this level are also stored in the Preset, so as a Scope user, you could further customize your Presets with different slope settings for each.

There are also a few special modules of interest:
The Tau Scale Positiv is used whenever you need to smooth out a control signal (in the analog modular days it might have been called a slew or lag processor). The gray pot adjusts the amount of lag, and is typically most effective right towards the end of the pot’s range (just a small change at that range will be quite effective). In this example, we are smoothing out the Aftertouch signal, which is a positive-only (unipolar) control signal. Therefore, we need the Tau Positiv (there’s also a Tau bipolar).
Both the CF KF and Key Level (KL) Easy convert MIDI to keytracking information for the filter and ADSR, accordingly.

*Hold the right mouse button down over a pot, select ‘Open Control Ranger’, and you will see the current pot value.