THE PROTEUS SYNTH

The Proteus synth is a virtual instrument which pays homage to the Korg Prologue 8/16 analog digital hybrid. This digital recreation is not identical but has extra features not on the original.

The standalone executable version proteus.exe will run in Windows 10 or on a Mac running Codeweavers Crossover 17 or higher. A 32 bit VST 2 version is also available proteus.dll. **Note with the vst demo version there is a sporadic noise introduced in the signal path which is not in the Full version so you can evaluate the software.**

1. There are 20 preset sounds preloaded in the synth. Programs created by the user can be saved/loaded as text files in standalone version or as fxp/fxb files using the host DAW program(VST). The synth his Midi

input enabled so you can play it from a keyboard. The synth also responds to Midi velocity changes (touch sensitive).

2. The Proteus standalone executable menu bar. You can set midi in & midi out, audio out and zoom. For audio you must set Direct Sound or ASIO output and if you want to use MIDI input and/or output set the outputs and inputs each time you run the program. On the stand aloneversion a zoom of 125% is best for typical laptop computers then view full screen. This will hide part of the keyboard but make the controls and text bigger. Press Esc. To return to 100%. The .dll can be zoomed on some DAWs or using windows accessibility settings.

Standalone menu bar below – in Proteus.exe

3. In VSTi with host software (Bitwig, Bandlab, Cubase, Cantibile, Ambleton etc.) the host controls the audio and midi parameters above. In VSTi multiple instances of synth can be run. For VSTi place proteus.dll in your normal virtual instrument folder.

Proteus - Panel Controls

		The Audio on/off button is the panic button and switches off the audio if needed. Click again to turn on audio. Below it is the Master Volume knob. At the bottom is the control for the number of notes which can sound at once – Polyphony. 1 to 256. High values will use more computer resources.
		Portamento adds a gradual change in pitch between notes. This portamento is polyphonic. The top knob changes the polyphony of the portamento. From 1 to 32 notes. The bottom knob - above the label 'Portamento' changes how quickly the note frequency moves to the next note. The drop down box turns portamento off, single note or polyphonic. Voice Spread – changes the delay between the right and left audio channels widening the stereo image.

Oscillators – The two green led buttons at the top switch on/off the 'envelope to pitch' controlling all of the oscillators 1-8 and 9-16 - the lower ADSR – see later.

There are 17 oscillators in all. VCO1 1 – 8, VCO2 9-16 and Multi.

Multi is a user drawn waveform. Waveforms can be saved and loaded. It can also be a carrier waveform and can have a variable phase modulation applied to it. The frequency of the Multi oscillator can be varied by +/- 5 octaves.

The modulator waveform for Multi can be sine, square, sawtooth or noise. A second modulator can also be applied. There is a volume control for each modulator. The frequency of the modulator can be varied by +/- 5 octaves.

The Mixer box balances the output sum of VCOs' 1-8 (top bank of oscillators) with the output sum of VCOs' 9-16 (bottom bank of oscillators) and the Multi Oscillator. Values of the output can be set between 0% and 100% of the incoming signal level.

	This section applies a filter to the audio output. You can vary the cutoff, resonance and keyboard tracking. Filter types are low pass, high pass, band pass, band reject and peaking. The green LED when on applies the sine function to the incoming signal x. The output signal is sin(x). This is a quick way to add harmonics.
	In the Amp EG box there are two envelope generators. The top one for controlling the signal volume over time. The bottom one for envelope to pitch over time. Below them are two Low frequency oscillators which can be applied to the pitch (vibrato) and cutoff filter. Turn them on/off by clicking on the green LEDs'.

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	The Mod Effects box houses Reverb, Ping Pong Delay / Flanger and Chorus. The effects are turned on/off by clicking the green LEDs'. There is also wave shaping using third order polynomials. Use the oscilloscope to see the output waveforms. At the bottom is a program/preset manager. Programs can saved/loaded as plain text files.
	The final top group houses the Compressor/Expander. The top green LED turns it off and on. You can vary the cut off point and attenuation of the signal. The output signal can be compressed – if wide dynamic range or expanded if low dynamic range. The look ahead determines how far the signal is controlled by future signals. The attack and release control how quickly the effect is applied and unapplied. Ratio controls how strong the effect is. Threshold when the effect is applied to the signal, Low/High how strong is the effect and soft clip reduced the severity of any clipping.

	If set to dry you get the full effect without mixing with the source.
	The pitch bend wheel when moved up or down raises or lowers the frequency of the note or notes being played. Keyboard animation by an external midi instrument. The lower green LED is off by default. When an external midi instrument is used to play the synth this turns off the animation of the keys moving on screen. It prevents graphical updates affecting the sound and causing dropouts. It is particularly important to turn off if you are using Codeweavers crossover on a Mac. To see animation click LED to light it up.
	This button takes you to my website where you can find the latest documentation.

THE OSCILLATORS

Oscillators VCO 1 (top bank) and VCO 2 (bottom bank) are each made from 8 pairs of separate oscillators. Ie each oscillator is built using 8 individual oscillators in pairs. See image above of the bottom two panels above the keyboard. You can vary their Tunings, Volume, Waveform, Cross modulation – top green LED / cross modulation amount and Bottom green LED ring modulation. The envelope to pitch led switches are in the Oscillator box. Green LEDs turn on/off cross (top LED) and ring modulation bottom LED.

THE ARPEGGIATOR
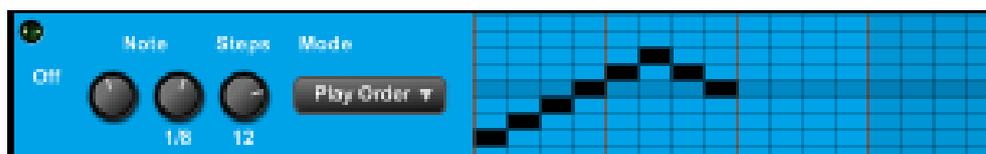
To the right of the keyboard there is an arpeggiator which can be programmed to vary speed, note step size, note length, and edit the number of steps. The green LED turns it on/off. The 'play order' drop down box switches between play order, up, down and random notes. This effect is dependent on how the note step size is set.

THE KEYBOARD

Use the mouse to click on keys to play. Or use the computer keyboard. Z to U.

MIDI RECORDER

Finally there is a midi recorder/play back / looper . Click on 'MIDI Record' to start recording. MIDI PLAY plays back the recording. Clicking the LOOP LED plays the recording in a loop continuously. END finishes playback.

Feedback and suggestions are welcome. For more information email me at stuartpryer@gmail.com

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