

# Ocean Swift Synthesis - OS20



## The OS20 I/O

- Patch **inputs** are designated by a **red sleeve**.
- Patch **modulation inputs** are designated by a **gold sleeve**.
- Patch **outputs** are designated by a **silver sleeve**.

## Controls

### Oscillator Section

**Oscillator 1 Waveform:** A choice between four waveforms: triangle, saw, pulse, white.

**Oscillator 2 Waveform:** A choice between four waveforms: saw, square, rect, ring.

**Coarse:** Coarse tuning of the osc.

**Fine:** Fine tuning of the osc.

**Osc 1 PW:** Controls the shape of the pulse. At the center position the shape is a square.

**Osc 1 PWM:** Depth of pulse width modulation of the pulse shape, applied to the connected modulation source at the input.

**Osc 2 Sync:** Button to turn on and off osc sync. When on osc2 retriggers for every new cycle of osc1. If osc1 and osc2 are set too far apart in range your sound will break and can even go silent.

#### **Osc Patch Outputs:**

- Five colors of noise outputs: white, pink, brown, green, purple
- Separate outputs for osc1 and osc2 and the mixed osc section
- Separate outputs for osc1 and osc2 sine shapes. Both of these sines are retriggered by incoming gate signals (osc2 sine output disregards the sync switch parameter)
- Outputs for the frequency information from each osc. (The frequency information chain starting from MVC midi or the drone note, through the coarse and fine parameters and the frequency modulations). This can be used to drive additional modular oscs for example.

#### **Osc Mod**

**Mod Gen:** Modulation depth applied to the osc pitch via the tri/saw shape of the mod gen.

**Env 1:** Modulation depth applied to the osc pitch via envelope 1.

**Osc 1 Ext:** Modulation depth applied to the pitch of osc1 via an external modulation signal connected to the input.

**Osc 2 Ext:** Modulation depth applied to the pitch of osc1 via an external modulation signal connected to the input.

#### **Osc Mixer**

**Osc 1:** Volume control for osc1.

**Osc 2:** Volume control for osc2.

**Osc 1 External Mod:** Volume modulation (tremolo) depth applied to the volume of osc1 via an external modulation signal connected to the input.

**Osc 2 External Mod:** Volume modulation depth applied to the volume of osc 2 via an external modulation signal connected to the input.

#### **Filter Section**

**Filters Input Crossfade:** Crossfade between the hardwired filter inputs (the sound coming from the osc section) and the filter section's external input.

**Cutoff:** The cutoff point of the filter.

**Peak:** The resonating quality of the filter.

**Mod Gen:** Depth of modulation applied to the filter by the mod gen's tri/saw shape.

**Env 2:** Depth of modulation applied to the filter by envelope 2.

**Ext:** Depth of modulation applied to the filter by an external modulation signal connected to the input.

**KBT:** Bipolar midi note tracking modulation of the filters. At the center position no modulation is applied. Even when drone mode is set to note, the filters will still respond to midi notes (as long as the note input of the OS20 is connected to an MVC's note output)

### **Filter Patch Outputs:**

- HP output from the first filter - the 6db HP.
- Three filter type outputs from the second filter - LP, BP, HP. The synth itself is hardwired to output the LP filter internally.

### **Envelopes**

**Gate / Audio Trigger Switch:** A switch to determine the source for the envelope's gate signal. When turned off the envelope will be gated by incoming midi gate's through a connected MVC. When turned on the envelope will be gated by incoming audio (audio triggering).

**Trigger Threshold:** Determines the sensitivity of the audio triggering circuit, only in use when the envelope is in audio trigger mode.

**ADSR:** Controls for attack, decay, sustain and release.

**Decay Mod:** The depth of bipolar modulation applied to the decay of the envelope by the decay external input.

**Release Mod:** The depth of bipolar modulation applied to the release of the envelope by the release external input.

**Slope:** Slope control for the decay and release portions of the envelope.

**Vel:** Bipolar velocity control over the overall level of the envelope. Center position indicates no modulation. The OS20 Vel input needs to be connected to an MVC's vel output in order for the envelopes to respond to velocity.

### **Envelope Patch Outputs:**

- Three output points for the normal as drawn envelope shape, an inverted form of the envelope and an output for the gate signal (as generated by incoming audio into the external trigger input).

### **VCA**

**VCA Input Crossfade:** Crossfade between the hard wired VCA input (the sound coming from the filter section) and the VCA's external input.

**VCA External Mod Switch:** When turned off the VCA is hard wired to and controlled by envelope 2. When turned on the VCA is controlled by a modulation signal connected to the external mod input.

### **Mod Gen Section.**

**Shape:** This knob affects both the internal pulse shape as well as the internal tri saw shape. For the pulse shape the width of the pulse is affected (center position is a square), while the tri-saw mixes between a triangle at the left position and a saw at the right position (with a mix of both in the middle).

**Shape Mod:** Depth of modulation applied to the shape parameter via modulation

**Rate:** The speed of the lfo when not in sync mode. From 0.01 to 400hz.

**Div:** The speed of the lfo when in sync mode. Measure divisions based on the device's BPM setting. Provided are 19 divisions: 64bar, 32bar, 16bar, 8bar, 4bar, 2bar, 1bar, 1/2p, 1/2, 1/2t, 1/4p, 1/4, 1/4t, 1/8p, 1/8, 1/8t, 1/16p, 1/16, 1/32.

**Sync:** Turns sync mode on and off.

**Retrig:** Retrigger the osc to start at the point specified by the phase knob with each new midi gate.

**Invert:** Inverts the shape of the Saw/Tri output.

**Mod Gen Patch Outputs:**

- Three LFO shape outputs: Saw/Tri, Pulse, Mix. The mixed output presents a mix of the saw/tri output with the pulse output.

**Drone Mode**

**Amp:** When turned on the device bypasses the vca section and is always outputting sound.

**Note:** When turned off the device responds to midi note messages and uses them as the base pitch of the device. When turned on the device does not respond to midi notes but instead uses the value set in the note select knob as the base pitch of the device.

**Note Select:** The base note used for the pitch of the device when note mode is turned on.

**Drone Mode Patch Output:** Outputs the note selected in the note select as frequency information (for example to provide the drone note to another modular oscillator).

**External Processing**

**Amp:** Allows for added gain to the incoming signal.

**Distort:** Distortion of the incoming signal.

**LP Cut:** Cutoff point of a lowpass filter applied to the incoming signal.

**HP Cut:** Cutoff point of a highpass filter applied to the incoming signal.

**Follower Attack:** Attack parameter for the envelope follower derived from the incoming audio.

**Follower Release:** Release parameter for the envelope follower derived from the incoming audio.

**Output Section**

**Main Volume:** Master volume of the synthesizer section which goes to the synth output (but before the effects chain).

**Volume Mod:** Volume modulation (tremolo) depth applied to the main volume via an external modulation signal connected to the input.

**Warm:** Switch for turning on a mild distortion effect.

**Soft:** Switch for turning on a mild soft saturation / soft clip effect.

**FX Chain**

**FX Chain Input Crossfade:** Crossfade between the hard wired effects chain input (the sound coming from the synth output section) and the fx chain's external input. Note that if you are outputting the internal synthesis from the fx section, the voices are summed within the device and you do not need a poly out module, since after the effects the device is monophonic.

**FX Bypass:** Turns on the signal passing through the effect. Note that if an effect is not loaded in the slot and the slot is turned on, there will be no sound passing through the slot.

**Patch Effects**

**Sample and Hold:** Sample and hold circuit with a signal input, modulation input and resulting output. Two sample and hold circuits are available on the OS20.

**Ring Mod:** Ring modulator with inputs for two signals and an output for the result.

**Warm:** A mild distortion effect with signal input and output.

### **Main Controls**

**BPM:** Sets the tempo of the device from which the Mod Gen divider will calculate from when in sync mode.

#### **Main Patch Inputs:**

- **Freq:** Connect to a frequency source, typically an MVC's freq output.
- **Gate:** Connect to a gate source, typically an MVC's gate output.
- **Note:** Connect to a note source for the filter keyboard tracking, typically an MVC's note output.
- **Vel:** Connect to a velocity source, typically an MVC's vel output.

#### **Main Patch Outputs:**

- **Esync:** Connect to an MVC's e-sync input.
- **Synth Out:** Polyphonic output of the synth. Notice that when outputting from this output, you will need to include a poly out module within your patch in order to sum the voices. (If you are outputting from the fx section, the voices are summed within the device and you do not need a poly out module, since after the effects the device is monophonic).

### **Credits:**

**Circuit Design:** Yaron Eshkar

**Gui Design:** Fernando Abreu

### **Web:**

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