

Spherical Wavetable Navigator

by 4ms.

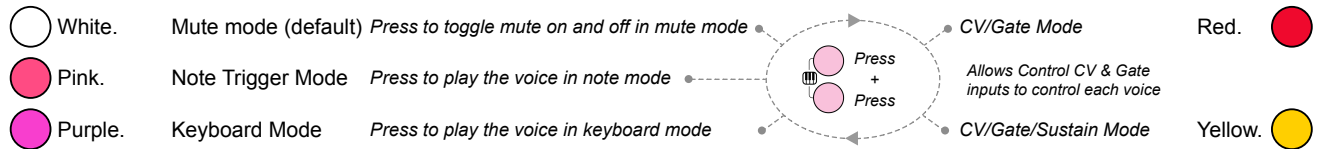


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SWN or Spherical Wavetable Navigator is a 6 voice wavetable synth. Each voice is represented as a channel which can be controlled individually or collectively. The unique feature is the ability to navigate 3 dimensionally through the factory wavetables or user recorded wavetables. Internal LFO's bring additional movement into the sound design options.

Channel Buttons (Voices)



Buttons - Hold + Turn
to adjust the parameter for only the individually selected voice(s).

Faders
Slide to control each channels volume level
Press Channel Button + Slide to adjust panning of the channel

Fine
Hold the fine button while adjusting a setting for micro / finer adjustments. Controls such as transpose, spread, LFO (speed, phase, gain), latitude, depth, longitude, browse, dispersion.

Transpose
Gold labels under the control indicates the secondary 'Press + Turn' function

Push + Turn for quantization

Octave
Changes pitch in octaves

Clock In
Synchronises LFOs. Blue LED.

LFO > VCA
Toggles between LFO and VCA control of the VCO channels.

LFO Type
Toggles LFO output type. Shape, Trigger and gate are the options.

LFO Speed
Divide or multiply LFO clock.
Press + Turn: LFO output gain.

Waveform In
Audio input for recording 2.5 sec of audio for creating user wavetables.

Load Preset
Turn to select preset slot in the sphere
- Dim yellow sphere LED = preset.
Tap knob - LED flashes green.
Tap knob again - Preset loads

Presets are cleared and saved with this control too

CV In: Navigate wavetable (0-5V)

Depth

Navigates in wavetable (depth).
Push + Turn: Dispersion moves all channels - direction away from start.

CV In: Dispersion offset (0-5V)

Browse

Navigates entire sphere of wavetables (Zig-Zag).
Push + Turn: Select Sphere.

CV In: Browse offset (0-5V)

CV In: Offset Selection of Sphere (0-5V)

Transpose
Pitch transpose in semitones.
Push + Turn: Spread notes to chords.

CV In: 1V/Oct Pitch (0-10V)
All channels.

CV In: 1V/Oct Spread (0-5V)

Channel CV In
1V/Oct Pitch or VCA Level
(Switch selectable)

LFO Shape

Selects LFO Waveshape.
Push + Turn: LFO Phase

LFO Outputs x6 (8V Max)

LFO CV Input global tempo (0-5V)

Audio Outputs

Stereo (Right for Mono)

CV In: Spreads spheres (0-5V)

Longitude

Navigates in wavetable (up-down).
Push + Turn: Spreads spheres across channels.

CV In: Navigate wavetable (0-5V)

Latitude

Navigates in wavetable (side-side).
Push + Turn: Dispersion pattern selection sets direction of travel.

CV In: Dispersion Pattern Select (0-5V)



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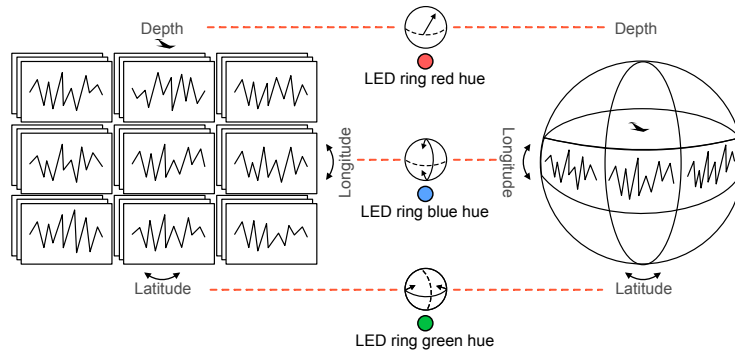
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Wavetables

Wavetables technically illustrated as a 3 x 3 x 3 matrix depth, longitude, latitude. 27 wavetables in a sphere.

Spread and dispersion creates spaces between wavetables of ALL channels



Wavetables are mapped into a virtual sphere (actually a torus) with each table wrapping around in a 3 dimensional plan.

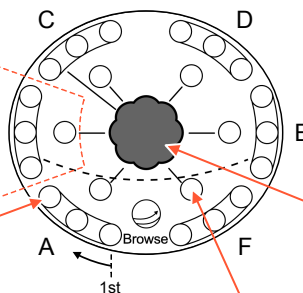
120 Spheres are available of which 12 are factory provided.

Select a sphere.

1. Push Browse + Turn. This selects a sphere.
2. Hold a channel button + Push Browse + Turn. This selects a sphere for the selected channel.
3. The inner LED colour indicates the selected sphere.

Each Channel A-F is represented by a zone in the LED rings.

The range of colours in the outer LED ring represents the range of wavetable positions in the sphere for the channels.



Navigate a sphere.

1. Turn Browse. This navigates through all 27 wavetables within a sphere in a zig-zag pattern.
2. Turn the Latitude, Longitude or Depth controls to navigate in one dimension across the sphere.
3. Hold a channel button when browsing for navigating a single channel.
4. The outer LED colour indicates the selected position

Tap the browse control to view the current sphere status colours.

| Factory Spheres | | | | | | | | | | | | User Spheres | | | | | |
|-----------------|-----------------|------------|------------|----------------|--------------|--------------|----------|------------------|----------------|-----------------|----------------|-------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Harmonics | Sine Distortion | Formants 1 | Formants 2 | Morphing Cello | Talkative FM | Distorted FM | 909 Hits | Wavetabled Rings | Smooth Troughs | Alias Maximizer | Sine Sequences | User Spheres 1-18 | User Spheres 19-36 | User Spheres 37-54 | User Spheres 55-72 | User Spheres 73-90 | User Spheres 91-108 |

The inner LED ring colour represents the selected sphere per channel. This is also reflected in the colour of the channel buttons when adjusting sphere browse or WT Spread.

The outer ring also reflects the selected sphere, indicated by the colour, starting bottom left for the 1st sphere and navigating clockwise.

Reset current sphere.

1. Push Load Preset + Latitude.
2. Current sphere is reset to the first factory sphere and the wavetable spread is cleared.

Reset Navigation.

1. Press Load Preset + Depth.
2. The navigation position and sphere selection is reset.

Recording a user sphere.

1. Connect an external audio source to the 'Waveform In' Input.
2. Press Depth + Latitude + Longitude to enter sphere recording mode.
3. If required, Press 'LFO Type' to toggle recording monitoring on (solid green) / off (flashing green).
4. Press 'LFO>VCA' to start recording - flash red quickly (Waveform In also flashes red). SWN will record only when an audio input is detected.
Note: Pressing 'Fine' + 'LFO>VCA' will record only to the currently selected wavetable and not the entire sphere.
5. Play the audio input and recording will start. The LEDs will be solid red and the sphere LEDs will illuminate in turn while 2.5 sec sphere is recorded.
6. The Sphere will be automatically created by dividing the audio into the 27 wavetables. Push + Turn 'Browse' to position wavetable recording in the sphere.
7. Apply effects if required (available in recording mode)
8. To Save, turn 'load preset' to select a sphere slot. Hold 'Load Preset' until it flashes red, Press again to confirm to save.

Using FX (Recording Mode).

When in recording mode the channel buttons switch to effect options which can be applied to all wavetables, each dimension or only the current wavetable.

Hold 'Channel' button + Turn Browse to adjust the selected effect for the current wavetable.

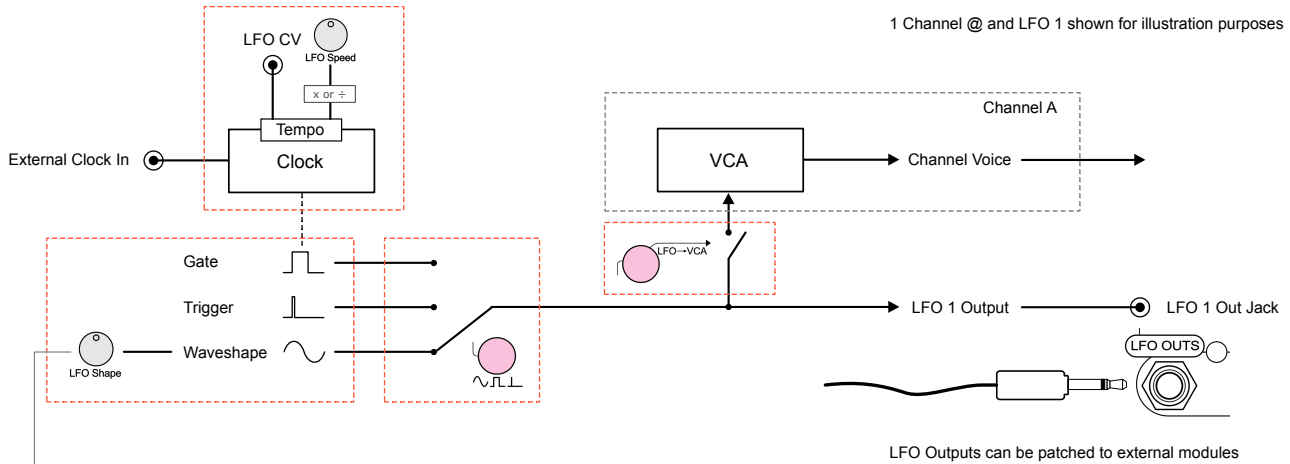
Hold 'Channel' button + Turn Depth or Latitude or Longitude to adjust the selected effect for the wavetable dimension.

Hold 'Channel' button + Push & Turn Browse to adjust the selected effect for all of the 27 wavetables.

| Effects | | | | Utility | |
|-----------------------------------|---|-------------------------------------|--|---|--|
| A | B | C | D | E | F |
| Wavefolding Increase harmonics | Bit Decimation Simulates bit reduction | Metalizer Harsh high pass filter | Low Pass Filter Non Resonant brick wall | Gain / Normalisation Attenuates the waveform | Seam Smoothing Cross fades wavetables |

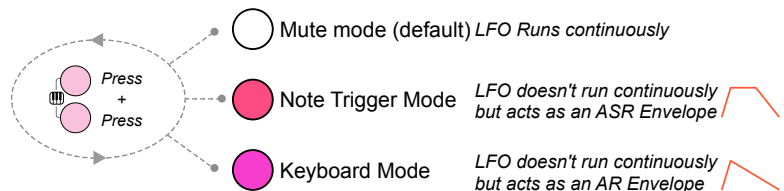


LFO's & Modulation



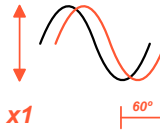
| Channel Button | Waveshape | Description |
|----------------|-----------|------------------|
| Ramp Down | | Saw 100% |
| | | Saw 75% |
| | | Saw 50% |
| | | Saw 25% |
| | | Saw 12% |
| Ramp Up | | Ramp Up 100% |
| | | Ramp Up 75% |
| | | Ramp Up 50% |
| | | Ramp Up 25% |
| | | Ramp Up 12% |
| Utility | | Sine |
| | | Triangle |
| | | DC Steady State |
| Complex Shapes | | Complex Shape 1 |
| | | Complex Shape 2 |
| | | Complex Shape 3 |
| | | Complex Shape 4 |
| | | Complex Shape 5 |
| | | Complex Shape 6 |
| | | Complex Shape 7 |
| | | Complex Shape 8 |
| | | Complex Shape 9 |
| | | Complex Shape 10 |
| | | Complex Shape 11 |
| | | Complex Shape 12 |

LFO Speed ranges:
Div /64, /48, /32, /24, /16, /8, /7, /6, /5, /4, /3, /2
Mul x32, x24, x16, x12, x8, x7, x6, x5, x4, x3, x2



Push & Turn 'LFO Speed' to adjust the LFO gain 0.4V - 8.8V range

Push both 'Load Preset' + 'LFO' Speed' to reset all speed multipliers / dividers back to default.



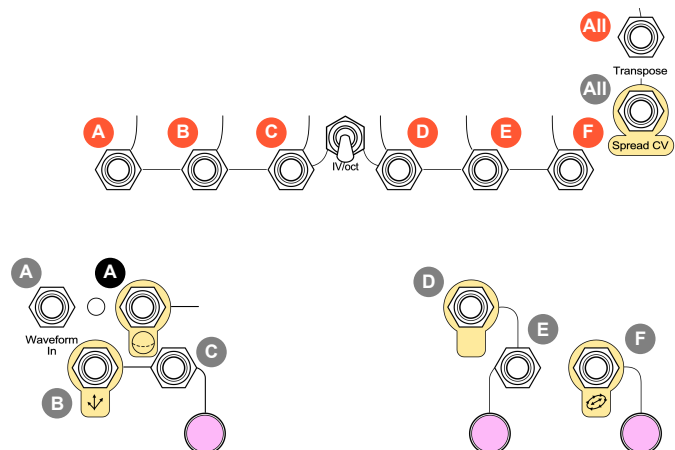
Push & Turn 'LFO Shape' to adjust the LFO phase offset.

Push both 'LFO Shape' + 'LFO' Speed' to toggle 60° phase offset between all of the 6 LFO's

Full LFO Reset: Push 'Load Preset' + 'LFO' Speed' + 'LFO Shape' for 1 second to reset all LFO's

CV / Gate (dim red) & CV / Gate / Sustain (dim yellow) Modes

These modes, selected by pressing both 'LFO>VCA' & 'LFO Type' to cycle modes, allows existing jacks to be used as 6 gate inputs to accompany the 6 CV inputs, plus 2 jacks for 'all' channels CV and gate. CV / Gate / Sustain recognises the input pulse width which CV / Gate mode ignores the pulse width.



A CV Inputs. 'All' is in CV / Gate and CV / Gate / Sustain mode.

A Gate / Trigger Inputs.

A Gate / Trigger input for CV / Gate / Sustain mode - Channel A.



General Reference

Reset / Load Blank Preset.

1. Turn the 'Load Preset' knob to select a blank slot (LED Off).
2. Press the 'Load Preset' button to select blank preset. Sphere flashes green.
3. Press the 'Load Preset' button a second time to load.

Load a Preset.

1. Turn the 'Load Preset' knob to select the desired slot (LED colour represents the presets).
2. Press the 'Load Preset' button to select preset. Sphere LED flashes green.
3. Press the 'Load Preset' button a second time to load.

Save a Preset.

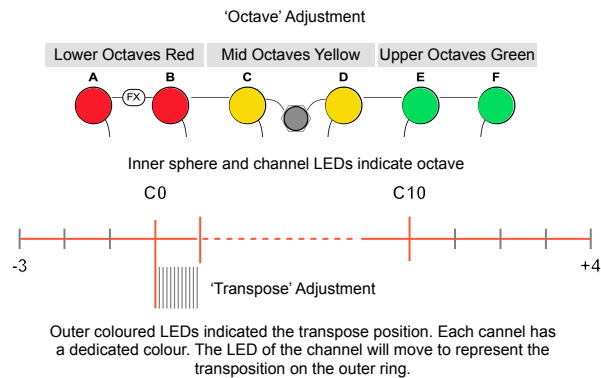
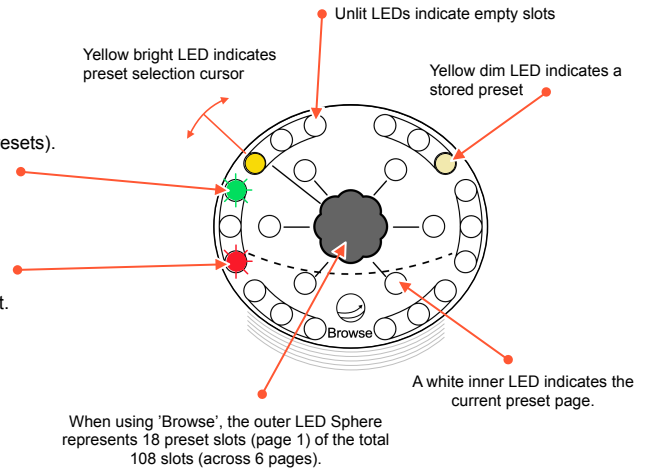
1. Turn the 'Load Preset' knob to select an empty slot (LED Off).
2. Hold the 'Load Preset' button for 2 seconds until sphere LED flashes red.
3. Press the 'Load Preset' button a second time to save the current setting as a preset.

Delete a Preset.

1. Turn the 'Load Preset' knob to select a preset to delete.
2. Hold the 'Load Preset' button for 6 seconds. Sphere LED flashes multicolored.
3. Press the 'Load Preset' button a second time to delete.

Undo Load / Save / Clear a Preset.

1. Hold 'Fine' + Press 'Load Preset' knob to undo the last action.



Transposing Channels.

1. Turn the 'Transpose' knob to adjust the pitch in semitones.
2. Use 'Fine' + 'Transpose' for smaller changes.
2. Turn the 'Octave' knob to adjust the pitch in octaves.
3. Hold a 'Channel' + 'Transpose' or 'Octave' to only change the selected channel.

Fine Tuning: Outer sphere LEDs Indicate detuning

- Pulsing red indicates a sharp. Faster pulse indicates a higher level of detuning.
- White indicates not detuned. Faster pulse indicates a higher level of detuning.
- Pulsing blue indicates a flat. Faster pulse indicates a higher level of detuning.

Locking a channel

1. Hold 'Fine' button + Press 'Channel' to toggle lock on or off.
2. The channel will be locked and cannot be adjusted

Adjusting LED brightness.

1. Press the 'Load Preset' knob + Turn 'Browse'
2. The LED brightness will adjust.

Checking Firmware Version.

1. Power on SWN.
2. Observe the inner and outer LED status on power up.
3. The inner LEDs indicate the major firmware version and outer LED the minor version.

