

SHLUTI BOX

User Manual
Version 1.0

A circular step sequencer for Indian classical music
macOS Desktop & Web Application



Created by Julius Biercott & Claude
shlutibox.com

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1 — Origins & Philosophy

Shluti Box is the first step sequencer designed specifically for Hindustani classical music. Born from a deep respect for the tabla tradition and a desire to invent new methods of interacting with Indian classical rhythmic structures, it brings the ancient mathematical beauty of tala into a modern, visual, interactive instrument.

Traditional step sequencers were built around Western 4/4 time signatures — rigid 16-step grids designed for drum machines. Shluti Box breaks from this entirely. Its circular mandala interface reflects the cyclical nature of Indian rhythm, where time flows in circles rather than lines. The bilateral layout places Bayan (left hand) and Dayan (right hand) side by side, mirroring the physical position of a tabla player.

Every visual element in Shluti Box is functional. The radiating gold lines are timing references. The probability arcs show the chance each hit will fire. The lotus ratchet petals display per-step subdivisions. The teardrop pad shapes rotate together as a mandala. Nothing is decoration — the mandala IS the sequencer, built from its own components.

The instrument was conceived and directed by Julius Biercott. The architecture, design, and implementation were developed collaboratively with Claude, Anthropic's AI assistant — representing a new model of human-AI creative partnership in instrument design.



The rich landscape of Hindustani classical music traditions

2 — Overview

Shluti Box is a probabilistic circular step sequencer available as a macOS desktop application and a web application at shlutibox.com. Rather than playing every activated step on every cycle, each step fires according to an adjustable probability — creating evolving, generative rhythms that stay musical but never quite repeat.

The sequencer runs seven parallel lanes, each with its own sample, tala (rhythmic cycle), probability settings, direction mode, ratchet subdivisions, and signal chain. Lanes can run at different speeds, in different directions, and with different tala structures simultaneously.

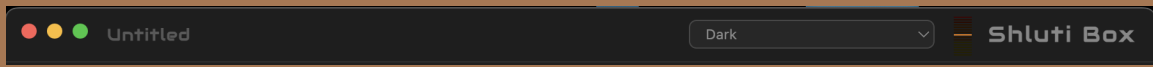
Shluti Box ships with 83 embedded tabla, percussion, and melodic samples recorded from authentic instruments. All samples include bol metadata (the spoken syllable for each drum stroke) for educational reference.

Lane Layout

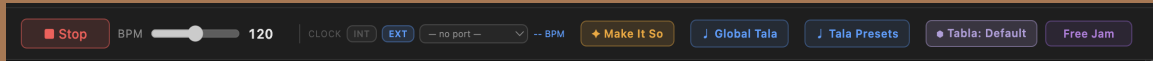
Lane	Type	Primary Role
Tabla Bayan	Drum	Left-hand tabla — bass strokes (Ge, Ka, Ghe)
Tabla Dayan	Drum	Right-hand tabla — treble strokes (Na, Tin, Te, Tun)
Manjira	Drum	Finger cymbals — rhythmic accents
Dholak	Drum	Double-headed barrel drum
Sarangi	Melodic	Bowed string instrument (sitar samples)
Bansuri	Melodic	Indian bamboo flute
Drone	Drone	Continuous sustained tanpura tone

3 — The Interface

The Shluti Box window has three vertical zones:



Title Bar — Session name, skin selector, VU meter, and logout button (web version).



Transport Bar — Play/Stop, BPM (with manual entry), clock source, Make It So, Global Tala, Tala Presets, cloud save/load, and Song Mode controls.

Lane Grid — Seven lanes stacked vertically. Each lane has a control panel on the left and the sequencer area on the right. The sequencer area displays in Standard view (linear grid), Circle view (mandala), or Snake view (boustrophedon grid for melodic lanes).

TABLA DAYAN DRUM

1 +

OPEN

+ sample dayan-open-05.o... x

— select sample - ▾

Vol Open  80

Tune Open  0

CLOSED

+ sample dayan-closed-04... x

— select sample - ▾

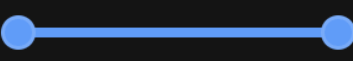
Vol Closed  80

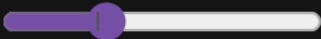
Tune Closed  0

M S ● 1

RATE 1/2 1x 2x Fwd Rev Pend

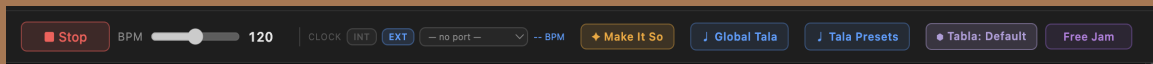
Reverb  0 short ▾

Freq Range  40-6.0k

Near/Far  30%

Tone  0

4 — Transport Bar



Play / Stop

Starts and stops the sequencer. All lanes reset to step 1 on start. Keyboard shortcut: Space.

BPM Slider

Drag to set tempo from 40–200 BPM. Double-click the BPM number to type a value directly (accepts 20–300). The slider updates to match.

CLOCK INT / EXT

INT: Shluti Box generates its own clock. EXT: syncs to incoming MIDI Beat Clock from a DAW or hardware controller.

Make It So

Opens the export dialog. Renders your sequence to WAV, MP3, and/or MIDI files.

Global Tala

Sets the tala (rhythmic cycle) for all four drum lanes simultaneously. Per-lane tala overrides are available in each lane's header.

Tala Presets

Opens the community tala presets panel. Browse shared patterns or submit your own compositions for inclusion.

Cloud Save / Open

Save and load sessions from cloud storage. 3 free sessions per instrument. Available on shlutibox.com.

Download

Export your session as a local JSON file for backup or sharing.

Free Jam / Song Mode

Toggles between free looping playback and structured song arrangement.

5 — Lane Types

Drum Lanes (Bayan, Dayan, Manjira, Dholak)

The four drum lanes form the rhythmic foundation. Each supports dual sample layers (Open and Closed), per-step probability, ratcheting (1–4 sub-pulses per step), and choke groups. The Tabla Bayan and Dayan lanes are special — when both are set to Circle view, they automatically merge into the bilateral Bol view with a shared Sam center pad.

Melodic Lanes (Sarangi, Bansuri)

The two melodic lanes have per-step pitch offsets (semitone arrows) for programming melodic sequences. In Snake view, the steps are arranged in a 4×4 boustrophedon grid that reads naturally for melodic content. Melodic lanes ship with sitar and bansuri samples.

Drone Lane

The Drone lane provides a continuous tanpura-style sustained tone. Instead of a 16-step grid, it has a single toggle pad — active or silent. The drone has independent volume, tuning, reverb, and filter controls. Eleven drone samples are included.

The Instruments

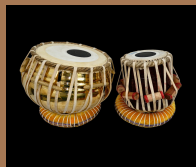


Tabla
(Bayan & Dayan)



Manjira
(Finger Cymbals)



Dholak
(Barrel Drum)



Sarangi
(Bowed Strings)



Bansuri
(Bamboo Flute)



Shruti Box
(Drone)

6 — The Mandala — Circle View

Circle view is the signature interface of Shluti Box and the default for all drum lanes. Steps are arranged in a circle with Sam (beat 1) at the 12 o'clock position. The transport sweeps clockwise around the circle during playback.

The mandala design philosophy: every visual element IS a functional component. Nothing is purely decorative. The visual complexity of the mandala grows organically as you program more steps, add ratchets, adjust probabilities, and assign choke groups.

Visual Components

Teardrop pads — Asymmetric pads arranged in a circle, pointed outward like lotus petals. Click to activate/deactivate steps. Click again for closed-hit state (coral dot appears).

Radiating gold lines — 32 rays from the center through each pad position, providing visual timing reference.

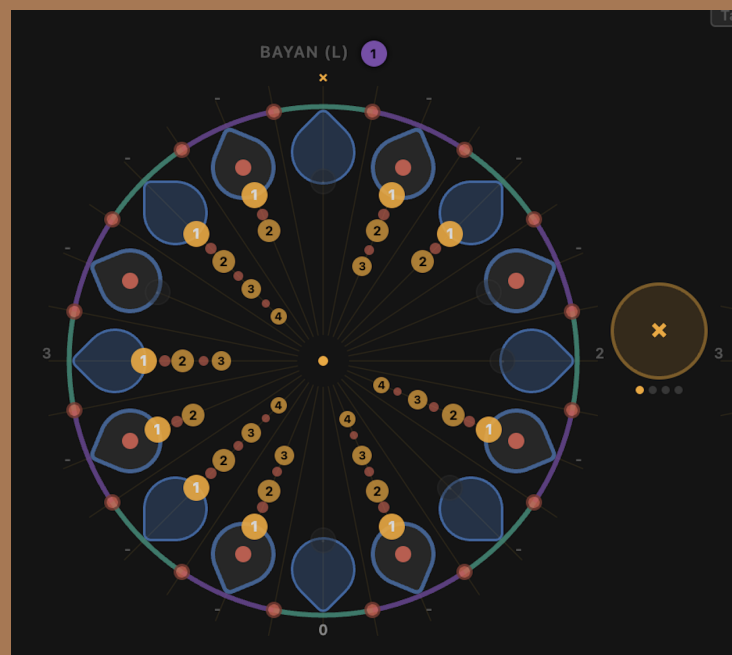
Probability arcs — Colored arc segments on the outer ring showing each step's probability value. Arc length = probability percentage. Arc color indicates choke state.

Draggable handles — Coral dots on the probability arcs that can be dragged to adjust probability values.

Ratchet lotus — Numbered LEDs with ornamental coral dots extending inward from each pad, displaying the ratchet subdivision count (1–4).

Tala markers — Numbers and dashes around the outer ring indicating the tala structure (Sam, Khali, vibhag divisions).

Sam center dot — Amber dot at the circle center that pulses on beat 1.

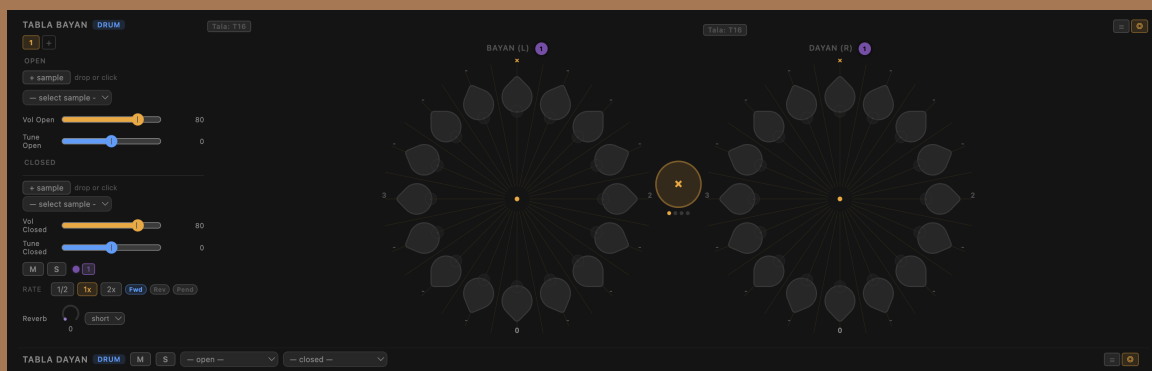


7 — Bilateral Bol View

When both Tabla Bayan (lane 0) and Tabla Dayan (lane 1) are set to Circle view, they automatically merge into the bilateral Bol view — a side-by-side dual-circle layout that mirrors the physical position of a tabla player's hands.

Bayan (L) appears on the left, Dayan (R) on the right. Between them sits the Sam center pad — a large interactive button that serves as both a performance tool and a rotation control.

The Dayan lane collapses into a compact strip below the bilateral view, showing the lane name, Mute/Solo buttons, Open and Closed sample selectors side by side, and the view toggle at the far right. Both circles operate independently — they can have different talas, different choke groups, and different patterns running simultaneously.



8 — Snake Mode — Melodic Sequencing



Snake Mode presents the step grid as a 4×4 boustrophedon grid — a weaving, serpentine path that reads naturally for melodic content. Named after the ancient writing pattern where lines alternate direction (left-to-right, then right-to-left), Snake Mode transforms the linear step sequence into a spatial melody map.

The name is no coincidence. The path through the grid traces a serpent's body — weaving back and forth through four rows, each row reversing direction from the last. This creates a natural spatial relationship between adjacent notes that makes melodic patterns intuitive to program and easy to read at a glance.

How it works

In Snake Mode, the 16 steps are arranged in a 4×4 grid:

```
Row 1: steps 1 → 2 → 3 → 4 (left to right)
Row 2: steps 8 ← 7 ← 6 ← 5 (right to left)
Row 3: steps 9 → 10 → 11 → 12 (left to right)
Row 4: steps 16 ← 15 ← 14 ← 13 (right to left)
```

The transport follows this serpentine path during playback, highlighting each step as it winds through the grid. Melodic lanes (Sarangi, Bansuri) default to Snake Mode because the spatial layout makes pitch relationships visible — adjacent cells in the grid are adjacent in time, and the weaving pattern prevents the eye from losing its place across long sequences.

Per-step pitch

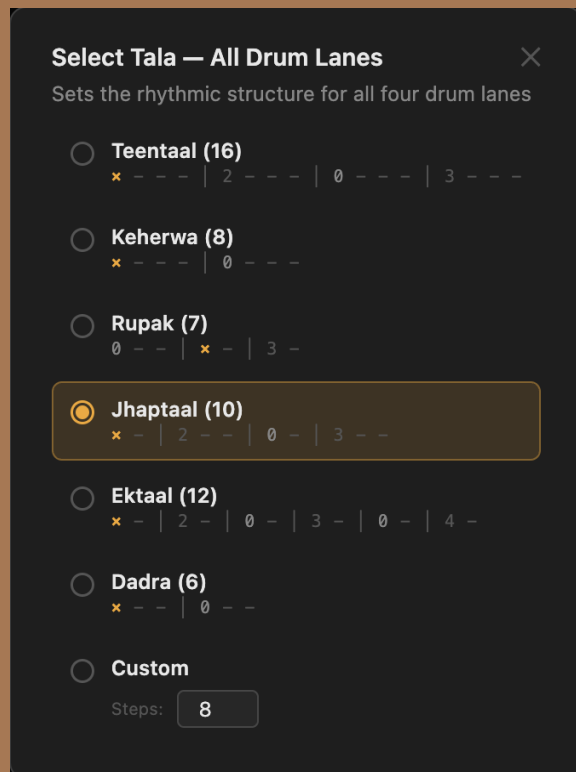
Each step in a melodic lane has pitch offset arrows (▲▼) for programming melodies in semitone increments. In Snake Mode, these pitch values create a visual contour across the grid — you can see the shape of your melody laid out spatially. Alt-click any pitch arrow to reset it to 0 semitones.

When to use Snake Mode

Snake Mode excels for melodic content: ragas, bass lines, lead melodies, and any pattern where pitch relationships matter more than rhythmic position. For purely rhythmic content (drums), Circle view is typically more natural. For mixing both, use Circle view on drum lanes and Snake view on melodic lanes simultaneously.

[Screenshot: Snake Mode grid showing a melodic pattern with pitch offsets]

9 — The Tala System



Tala is the rhythmic framework of Indian classical music — a repeating cycle of beats divided into groups (vibhags). Shluti Box is tala-aware: the number of steps in the circle adjusts to match the selected tala, and structural markers (Sam, Khali, vibhag boundaries) appear around the ring.

Tala	Beats	Structure	Common Usage
Teentaal	16	4+4+4+4	Most common tala in Hindustani music
Keherwa	8	4+4	Light classical, folk, film music
Rupak	7	3+2+2	Begins on Khali (wave)
Jhaptaal	10	2+3+2+3	Semi-classical compositions
Ektaal	12	2+2+2+2+2+2	Slow and medium tempo khayal
Dadra	6	3+3	Light classical, thumri, bhajan
Custom	1–16	User-defined	Experimental and fusion

Global Tala sets all four drum lanes simultaneously. Per-lane overrides are available via each lane's Tala label. In bilateral view, the Dayan's tala selector appears at the top of the bilateral area, separate from the Bayan's tala in the seq-header.

10 — Per-Step Ratchet & The Lotus

Ratcheting subdivides a single step into multiple evenly-spaced sub-pulses. A step with ratchet 4 fires four rapid hits within the time window of one step — creating the Ti-Ra-Ki-Ta trill that is fundamental to tabla technique.

Setting the ratchet

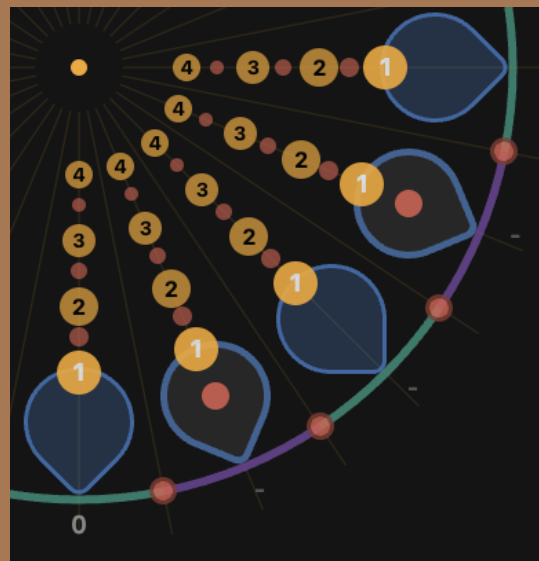
In Circle view, each step has a clickable ratchet dot on the inner ring (between the pad and the center). Click it to cycle through: 1 (single hit) → 2 → 3 → 4 → back to 1. The number on the dot shows the current ratchet value.

The Lotus visualization

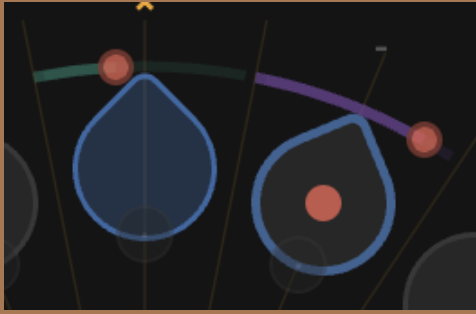
When a step's ratchet is set above 1, a line of numbered LEDs extends inward from the ratchet dot toward the circle center, separated by small ornamental coral dots. This creates a lotus petal pattern — inspired by traditional mandala dot-line art.

The LEDs are numbered sequentially: the clickable dot shows '1', the first inner LED shows '2', and so on up to '4'. The LEDs taper in size as they approach the center (14px → 12px → 10px), creating a natural perspective effect. During playback, each LED flashes in sequence as its corresponding sub-pulse fires — creating a cascading animation that mirrors the audio trill.

When all 16 steps have ratchet 4, the coral ornamental dots form complete concentric rings — the mandala grows from its functional components into a complete visual pattern.



11 — Probability Arcs & Handles

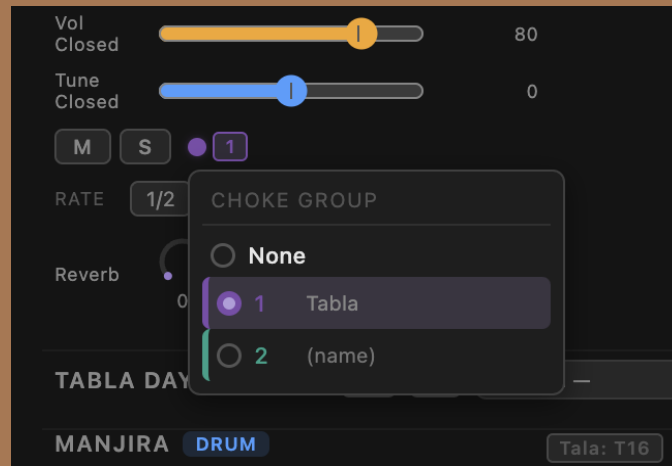


Each active step in Circle view displays a probability arc on the outer ring. The arc's length represents the probability percentage — a full arc segment means 100% (always fires), a half-length arc means 50% (fires roughly half the time).

The arc opacity scales with the probability value: faint at low values, fully saturated at 100%. A dim background arc always shows the full segment outline for reference.

Each arc has a draggable coral handle at its endpoint. Click and drag the handle along the arc to adjust the probability in real time. The handle snaps to the nearest percentage value and updates the step's probability immediately.

12 — Choke Groups & Three-Color Arcs



Choke groups model the physical behavior of drum heads: when a new hit occurs on the same surface, the previous note stops ringing. Any lane assigned to the same choke group number will cut off other lanes in that group when it fires.

Assigning choke groups

In the lane control panel, click the choke group number button to open the assignment menu. Select None, Group 1 (purple), or Group 2 (teal). The sidebar dot and number update to the group's color. In bilateral view, the choke LED next to each circle label is also clickable.

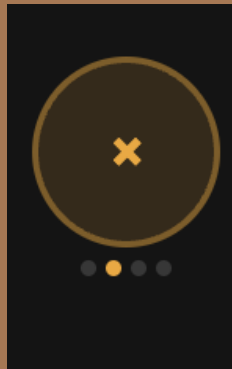
Three-color arc system

The probability arc color communicates both probability and choke state in a single visual element:

Arc Color	Meaning
Amber (gold)	Step has no choke group assigned — plays independently
Teal (green)	Step is in a choke group and is an Open hit — will ring until choked
Purple	Step is in a choke group and is a Closed hit — chokes the previous note

This means a single circle can display all three arc colors simultaneously — showing you at a glance which steps sustain, which steps choke, and which steps are independent.

13 — Sam Center Pad



The Sam center pad (×) sits between the two circles in bilateral Bol view. It is a performance tool with two modes:

Quick click (under 400ms): Restarts both Bayan and Dayan to Sam (step 1). Use this during playback to reset the rhythmic cycle — a common performance technique in tabla playing when the pattern needs to return to Sam.

Hold (over 400ms): Freeze mode. Both tabla lanes stop advancing and rapidly retrigger their current step (every 80ms), creating a granular stutter/freeze effect. Release to resume normal playback. This is a performance tool and does not affect exports.

Pad rotation knob

The Sam pad also controls the teardrop pad rotation. Scroll the mouse wheel over the × button to rotate all teardrop pads by 90° increments. The × symbol rotates to indicate the current angle. Four small position dots below the × button show the current rotation state — click any dot to jump to that position.

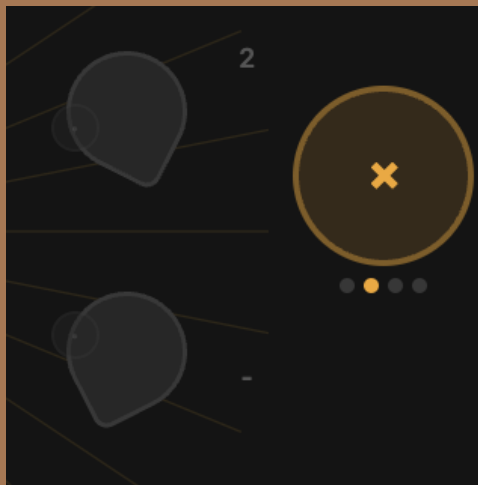
The Sam center dot inside each circle pulses on every downbeat (step 1) with a scale-up and glow animation, providing a visual metronome reference.

14 — Teardrop Pads & Rotation

In Circle view, each step pad has an asymmetric teardrop shape (border-radius: 50% 50% 50% 12%) with the pointed end facing outward from the circle center. Each pad rotates individually based on its position so all points radiate outward like lotus petals.

The teardrop shape is exclusive to Circle view — Standard view pads remain square with rounded corners. This is designed to be a skin-customizable feature in future versions, allowing users to choose between round and teardrop pad shapes.

Four rotation positions: Using the scroll wheel on the Sam center pad or clicking the position dots, all teardrop pads rotate together through 0°, 90°, 180°, and 270°. The default position points outward. Rotating creates dramatically different mandala aesthetics while maintaining full functionality.



15 — Step Grid & Standard View



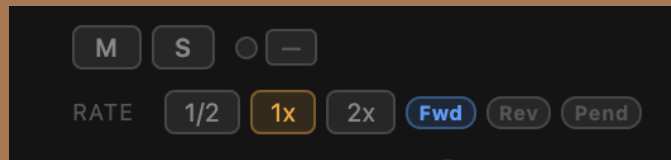
Standard view presents steps as a horizontal row of square pads — the familiar linear step sequencer layout. Each step is on or off, with probability shown as a number below the pad when active.

Activating steps: Click a pad to toggle it on/off. Click and drag across pads to paint them all to the same state. Right-click for individual probability and offset controls.

Three-state pads (drum lanes): First click activates (Open hit). Second click switches to Closed hit (pad shows a coral dot). Third click deactivates. The Open/Closed distinction maps to the dual sample layers — Open hit plays sample A, Closed hit plays sample B.

Step offset: Each step can be micro-nudged forward or backward in time for swing and humanization. Positive values push the hit slightly behind the beat.

16 — Direction Modes



Fwd (Forward)

Steps play from Sam (step 1) through the cycle, then loop. Default mode.

Rev (Reverse)

Starts at Sam, then plays backwards: 1 → 16 → 15 → 14... The first beat is always Sam for rhythmic anchoring.

Pend (Pendulum)

Bounces back and forth: 1→16→1. Pivot steps fire twice per pass, creating polyrhythmic textures when combined with forward lanes.

All direction changes queue at the cycle boundary. Speed options (1/2x, 1x, 2x) are also available per lane and queue at the boundary for phase-correct transitions.

17 — Pattern Banks

Each lane holds up to four independent step patterns. The pattern strip appears in the lane control area with numbered buttons for each stored pattern.

Switching: Click a pattern number to queue it for the next cycle boundary. The active pattern glows amber; queued patterns show a dashed border.

Adding: Click [+] to create a New blank pattern or a Same (duplicate) pattern as a variation starting point.

Saving: All patterns save with the session, including step states, probabilities, ratchet values, offsets, and open/closed assignments.

18 — Export — Make It So

◆ **Make It So**
Stereo mix always included. Choose additional options below.

WAV MP3

Cycles to export 4

Sample rate Auto (match interface) ▾

☒ Include reverb trail after last cycle

☒ Export each lane separately

☒ Export MIDI (.mid) file

☐ Make whole song file loud for sharing

Cancel Choose folder & export

Click Make It So or press Cmd+E to open the export dialog.

Format: WAV (24-bit) or MP3 at 128, 192, 256, or 320 kbps.

Sample Rate: Auto, 44.1 kHz, 48 kHz, or 96 kHz.

Cycles: Number of cycles to render (1–64).

Export stems: Creates individual per-lane stem files for DAW mixing.

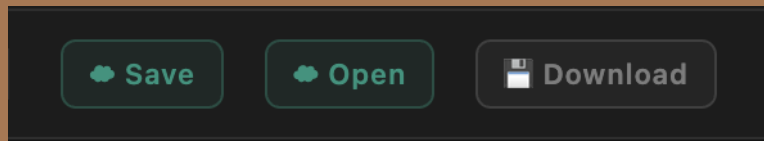
Export MIDI: Generates a MIDI file of the sequence.

Make loud: Applies a loudness maximiser pass.

Reverb trail: Adds silence for reverb tails to decay.

On the web version, exported files are delivered as a single zip file or written directly to a user-selected folder (Chrome/Edge via the File System Access API).

19 — Cloud Sessions



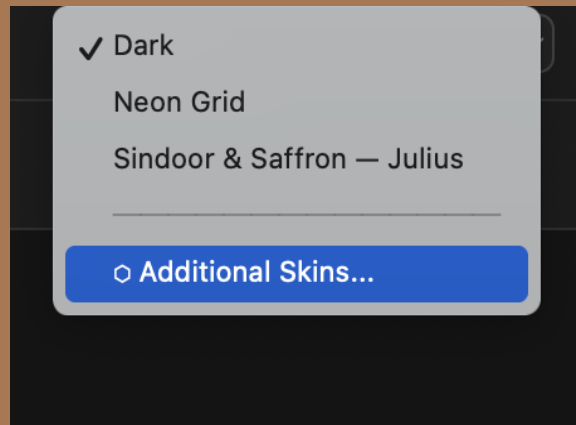
The web version at shlutibox.com supports cloud session storage via Firebase. Each user gets 3 free sessions per instrument (3 Shluti + 3 Blank Box).

Cloud Save: Click the teal Save button in the transport bar. Enter a session name and click Save. Saving with the same name as an existing session updates it without using an additional slot.

Cloud Open: Click the teal Open button. Your saved sessions appear in a list with timestamps. Click Open to load, or the × button to delete (with confirmation).

Local Download: The Download button exports the full session as a `.sbsession.json` file to your computer. Session data is pure JSON — typically under 50KB per session.

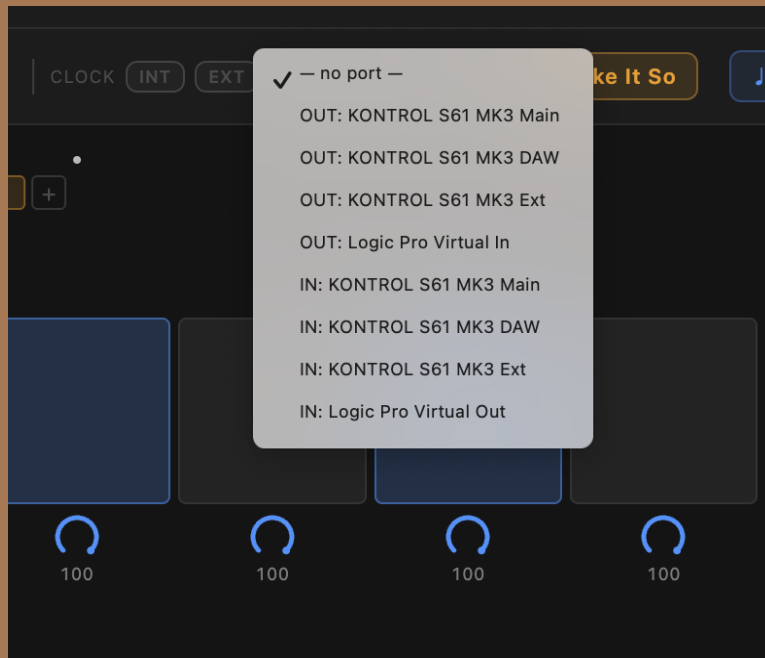
20 — Skins



Shluti Box supports user-installable visual themes called skins. The skin selector is in the title bar. Skins are .sbskin files — plain CSS with metadata comments.

Double-click any .sbskin file to install it (macOS). On the web, additional skins will be available at shlutibox.com/skins. The skin system customizes all colors, borders, and backgrounds while maintaining the functional layout.

21 — MIDI Beat Clock



Internal clock (INT): Shluti Box generates 24 pulses per quarter note and transmits MIDI Beat Clock on the selected output port. Hardware and software set to receive external clock will sync to Shluti Box's tempo.

External clock (EXT): Select EXT and choose an input port to sync Shluti Box to incoming MIDI Beat Clock from a DAW. The BPM display shows detected tempo using a weighted rolling average. A 20% phase-lock nudge corrects drift on each clock pulse.

Virtual MIDI port (planned): A future update will register 'Shluti Box' as a virtual MIDI destination on macOS, appearing directly in Pro Tools' MIDI Beat Clock send menu without requiring the IAC Driver.

22 — Accessibility



Shluti Box is designed with accessibility in mind. As a web-based platform, it benefits from the inherent accessibility features of modern browsers:

- All interactive controls are keyboard-navigable with visible focus indicators.
- Step buttons use semantic HTML button elements with ARIA labels for screen readers.
- Color is never the sole indicator of state — active steps have distinct shapes, borders, and text labels alongside color changes.
- The probability arc system uses both color and arc length to communicate values.
- Choke group assignment uses color (purple/teal), a number label, and positional context together.
- The interface supports browser-level zoom without layout breakage.
- All controls respond to standard keyboard interaction patterns (Space to activate, Tab to navigate).
- The web version runs on all major browsers and platforms — not limited to a single operating system.

Accessibility auditing and WCAG 2.1 compliance testing are ongoing. If you encounter any accessibility barriers, please contact presets@shlutibox.com.

23 — Keyboard Shortcuts

Shortcut	Action
Space	Play / Stop
Cmd+E	Open Make It So (Export)
Cmd+S	Save Session
Cmd+Shift+S	Save Session As
Cmd+O	Open Session
Cmd+N	New Session
Double-click BPM	Type tempo value directly
Scroll on Sam pad	Rotate teardrop pads 90°
Click Sam pad	Restart cycle to Sam
Hold Sam pad	Freeze / retrigger current step
Alt+click slider	Reset slider to default
Click+drag pads	Paint multiple steps to same state

Created by Julius Biercott and Claude · shlutibox.com

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