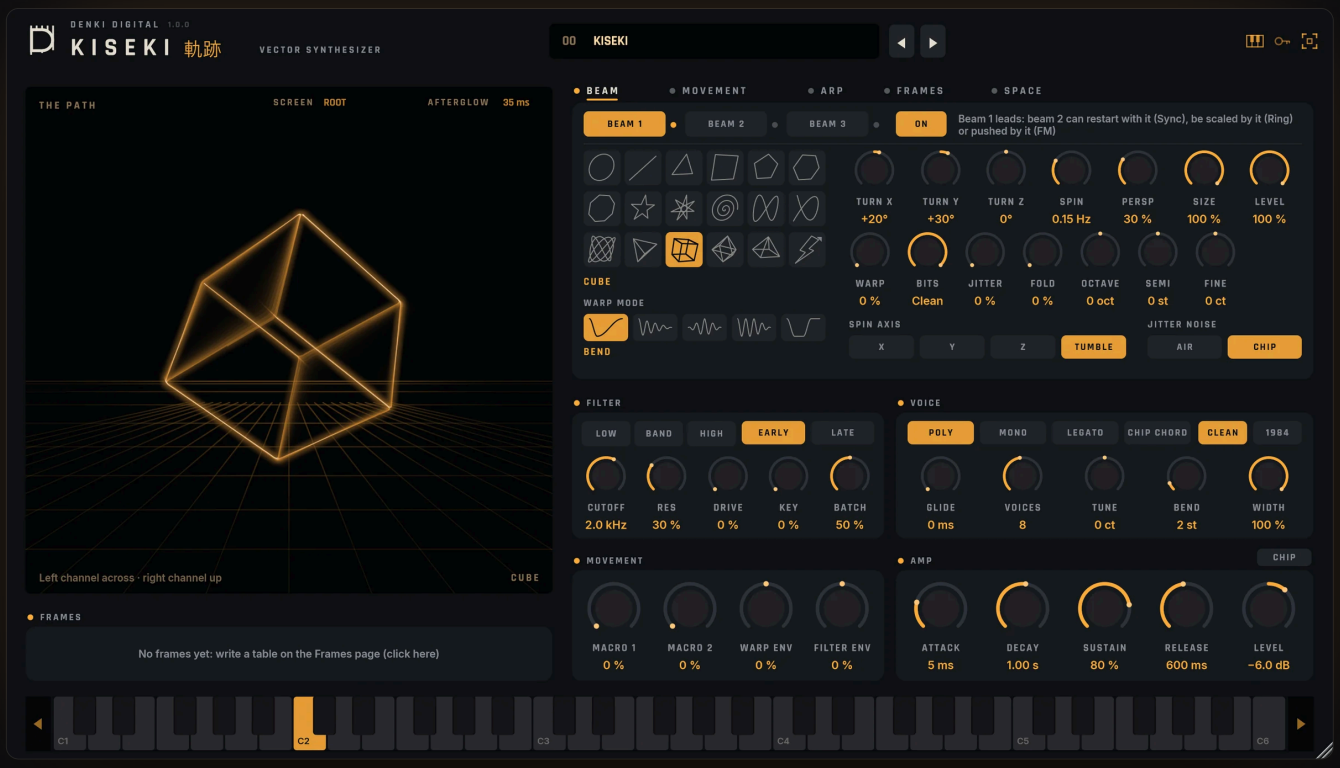
VECTOR SYNTHESIZER

Kiseki

軌跡

軌跡 the path traced

Kiseki is a vector synthesizer. Its screen is its sound: the left channel draws across, the right draws up, so the shape on the screen and the wave you hear are one thing.



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Kiseki, from the first sound to the last setting.

軌跡

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The screen is the sound: the beams and their shapes, warp, the chip's filter, movement, frame tables, the space, and all 13 programs.

Welcome

Kiseki is a vector synthesizer. Each note is a wireframe shape traced by a beam: the beam's movement across is the left channel, its movement up is the right, and the note is how many times a second the shape is traced. So the figure on the screen and the sound you hear are the same thing.

Kiseki means the path traced: the line a moving point leaves behind. Nothing on its screen is drawn for looks. A circle is two pure sines; a corner is where harmonics come from; a beam that slows glows brighter, and that glow is the warp you hear. Turn a cube and you hear it turn: in Kiseki, turning is the filter sweep.

Its sound is voiced for synthwave, after two machines of the 1980s: the phase-distortion keyboards, whose trick Kiseki calls warp, and the home computer's sound chip, with its growling filter, its noise, its stepped envelope and the frame tables most of its music was made with. Around them are Denki Digital's movement, the arpeggiator and chord generator, and the spaces of three other Denki Digital instruments: Kodama's echo, and Shimo's and Kumo's reverbs.

Every voice holds three beams, each with a shape of its own, and a shape can be your own too: drawn point by point on the screen, and heard as you draw it.

Five minutes with Kiseki

1. Put Kiseki on an instrument track. It opens on 01 Kasumi, the first of the twelve programs: hold a low chord and its spring haze breathes, drawn on the screen as it sounds.
2. Click the left arrow beside the program name, to 00 Kiseki, the Init program. Hold a low note, C1 or C2: a cube appears on the screen, tumbling slowly, drawn by the sound itself.
3. Listen as it turns: its tone moves as its corners swing between the two channels. Turn **Turn X** and **Turn Y** on the Beam page and the tone moves with them.
4. Click the circle, the first key in the shape grid: a ring of light, and a tone near a pure sine. Turn up **Warp**: the beam races round one half of the circle and crawls round the other, which glows, and the tone moves from a sine towards a saw.
5. Turn **Macro 1** and **Macro 2** in the Movement well. Macro 1 turns every beam, up to half a turn; Macro 2 warps them all.
6. Click **Beam 2**, then **On**: a second circle, 7 cents sharp, joins the first, and the two draw one figure between them. Click **Beam 1** to go back to it.
7. Hold a chord. The screen keeps to its lowest note, the root, drawn alone, and a small view at the screen's top right, One Voice, shows the newest. Click **Screen**, beside Afterglow, for All: the dense figure of every note's sum.
8. Click the program name for the menu, and try Kane no Koe in Bells or Kitsunebi in Textures, or go back to Kasumi in Pads.

NOTE NAMES

Kiseki names keys as Ableton Live does: middle C, MIDI note 60, is C3. The on-screen keys, the note names in this manual and the matrix's Key source all use these names.

The panel



Kiseki on Init, 00 Kiseki: one note held, the cube tumbling on the screen in the light its own beam leaves, and beam 1 on the Beam page.

1 **Program**	The program's number (00 for Init, USR for one of your own presets) and name, with a star once you change the sound. Click it for the program menu. A program's note, and notes such as Saved, show here for four seconds.
2 **Arrows**	The previous and next sound: the factory programs, then your own presets, then any designer banks, round and round.
3 **Keys glyph**	Shows or hides the on-screen keys.
4 **Key and size**	The licence key, and beside it the window size.
5 **The screen**	The sound itself: its left channel across, its right up, drawn with the light a beam leaves. See The screen.
6 **Afterglow** 35 ms to 4 s	How long the screen holds the beam's light.

	Screen Root, All, Wet	Beside Afterglow: what the screen draws. The lowest note held, alone (Root, as Kiseki opens); every note (All); or the sound as heard, the space and all (Wet).
	One Voice	While two or more notes sound, a small view under Afterglow shows the newest one alone.
7	**Footnote**	The shapes of the beams that are on, joined; with one beam on, its warp's mode too, unless that is Bend.
8	**Frame strip**	The frame table's steps, each drawn as the shape it plays, the step playing lit. Click it for the Frames page.
9	**Page titles** Beam, Movement, Arp, Frames, Space	The upper right's five pages. Click a title to show its page; its lamp lights.
10	**Beam keys** Beam 1, 2, 3	Which beam the Beam page edits, each with a lamp lit while that beam is on.
11	**On, Sync, Ring, FM** On or off	Whether the edited beam sounds and, for beams 2 and 3, how it follows the beam before. The line beside them says what Sync, Ring and FM do for this beam.
12	**Shapes** 17, and Yours	The beam's shape: a button for each, drawing its shape as the Turn knobs set it, the shape's name below.
13	**Warp Mode** Bend, Resonance Saw, Triangle, Trapezoid, Square	How Warp moves the beam round its shape. Each cap draws the wave its mode makes of a circle.
14	**Beam knobs**	Turn X, Turn Y, Turn Z, Spin, Persp (Perspective), Size and Level. See The beams.
15	**Beam knobs**	Warp, Bits, Jitter, Fold, Octave, Semi and Fine; and, for beams 2 and 3, FM Depth.
16	**Spin Axis, Jitter Noise** X, Y, Z, Tumble; Air, Chip	What Spin turns the shape about, and which noise Jitter adds.
17	**Filter modes** Low, Band, High	Each switched on by itself, and added together. With none on, the filter is out.
18	**Character** Early, Late	The chip's two filters. See The filter.
19	**Filter knobs**	Cutoff, Res (Resonance), Drive, Key (Key Follow) and Batch.

20 **Voice Mode** Poly, Mono, Legato, Chip Chord	How notes are given voices.
21 **Converter** Clean, 1984	The output as it is, or through the 1984 keyboards' 12 bits.
22 **Voice knobs**	Glide, Voices, Tune, Bend (Bend Range) and Width. See Voice and Amp.
23 **Movement knobs**	Macro 1 and Macro 2; Warp Env and Filter Env, the two envelopes' own amounts. See Movement.
24 **Amp knobs**	Attack, Decay, Sustain, Release and Level.
25 **Chip** On or off	The Amp envelope in the chip's own steps.
26 **Keys**	Five octaves and a top C, lit as they play. Click a key to play it; the arrows at either end move them an octave.

Using the controls

Knobs	Drag up or down to turn; hold Shift for fine control. The mouse wheel steps a knob, and a double-click returns it to its default. The value shows beneath in its own unit: 35 %, 2.0 kHz, +30°, 0.15 Hz, −6.0 dB.
Key rows	The shapes, Warp Mode, Spin Axis, Jitter Noise, Character, Voice Mode, the converter, and the choices on the Space page: click a key to choose it. The chosen key's light is on. Over the shapes and the warp's modes, the name below shows the one under the pointer.
Switches	On, Sync, Ring, Low, Band, High and Chip, and the On keys of the Frames and Space pages: click to turn on or off.
Menu keys	On the Movement, Frames and Space pages: click for a menu of every choice.

Every control is a host parameter, so your host can automate any of them. The frame table's steps and the beams' own drawings are not: they are kept with the project and in presets as data, as their chapters say.

The pages

The upper right holds five pages under one row of titles: **Beam**, **Movement**, **Arp**, **Frames** and **Space**. Each has its own chapter: The beams, Movement, Arpeggiator and chords, Frame tables, and The space, MIDI and the host. The page shown, and the beam the Beam page edits, are kept with the project.

The screen

The screen is not a picture of the sound. It is the sound: every sample Kiseki plays moves a beam, its left channel across and its right up, and the beam leaves light where it goes.



Four moments on the screen, set to Wet, the sound as heard. The cube as Kiseki opens. A chord of four notes on a warped, spinning star: the dense figure of their sum, and the newest note alone in the One Voice view. A frame table flicking between a square, a star and a cube. And three short notes through the chorus, Kodama's echo, Shimo and Kumo, their haze about the figure; the One Voice view stays half a second after the notes, here as they die away.

How it is drawn

The screen draws before Level, so turning Level down never shrinks the picture; what it draws, **Screen** chooses (below). Each sample leaves the same amount of light, spread along the stretch the beam travels in it: a slow beam is bright, a fast one faint, and a beam standing still is a bright dot. Between samples the beam follows a smooth curve, as the sound does. The light fades as an amber phosphor does, in about 35 milliseconds; a soft halo spreads round bright lines, and the brightest turn white-hot rather than clip.

The beam's strength follows the sound's loudness, as a real screen's beam can, so a fading note shrinks without gathering into a bright dot, a loud chord draws up to twice as bright as one note, and silence draws nothing. The screen draws thirty times a second while there is light on it, and rests, costing nothing, once it is dark and silent.

Reading it

A CIRCLE	Two pure sines, one in each channel: the purest tone Kiseki has.
CORNERS	Where the harmonics come from. The more sharply the beam turns, the brighter the tone.
BRIGHTNESS	Where the beam slows. The warp is the beam's speed round its shape, so the glow you see is the warp you hear.
WIDTH AND HEIGHT	How loud each side is. A figure wider than it is tall is louder on the left; taller than it is wide, louder on the right.

A LINE	Across the screen, the left channel alone; up it, the right alone. On the diagonal, from the bottom left to the top right, both sides alike: in the middle, as a mono listener hears it.
A DENSE TANGLE	A chord on All or Wet: several notes draw their sum. On Root the screen draws the lowest note alone, and the One Voice view the newest.

Behind the figure, a quiet floor of lines runs to a horizon: the one part of the screen that is drawn rather than heard, there so that turning and perspective have somewhere to stand. Where the figure passes near it, the floor takes its glow, as if the beam cast its light on it, and darkens with it. Along the foot, Left channel across · right channel up is a reminder; at the right, the footnote names the shapes of the beams that are on (CUBE + CIRCLE), and, with one beam on, its warp's mode unless that is Bend (CIRCLE · SQUARE).

What the screen draws

Every note you hold is heard, and the whole space; but several notes added together draw a figure that never closes, and a reverb or an echo smears the two channels apart, so a chord through the space tangles into a knot. **Screen**, beside Afterglow, chooses what the screen shows.

Root As Kiseki opens	The lowest note you hold, alone, after its own filter and before the space: one clean figure however many notes sound, and however wet. Let the root go and the screen moves to the next lowest held; with none held, it follows the lowest still sounding as it dies away.
All	Every note, added together, before the space: the chord's own figure, without the space's smear.
Wet	The sound as heard: every note, through the chorus, the echo, Shimo and Kumo.

Click it to step on, Root to All to Wet and round; a right-click steps back, and the mouse wheel steps too. It changes only the picture, never the sound, and is kept with the project; a project saved before it opens on Root.

Afterglow

Afterglow 35 ms to 4 s; 35 ms	How long the screen holds the beam's light: 35, 60, 100, 160, 250, 400 and 650 ms, then 1, 1.6, 2.5 and 4 seconds. Click its left half to step it down and its right half to step it up, or drag it, or turn the mouse wheel over it; a double-click returns it to 35 ms. Long, a spinning shape leaves a trail of its turns, and a frame table's steps lie over each other. It changes only the picture, never the sound, and is kept with the project.

One Voice

While two or more notes are heard, a small view, One Voice, opens at the screen's top right and shows the newest note alone: after its own filter, before the notes are added together and before the space. It stays half a second after the chord, then closes. One voice retraces the same figure over and over, where a chord's sum wanders, so the view draws it at half the light.

When the sound stops

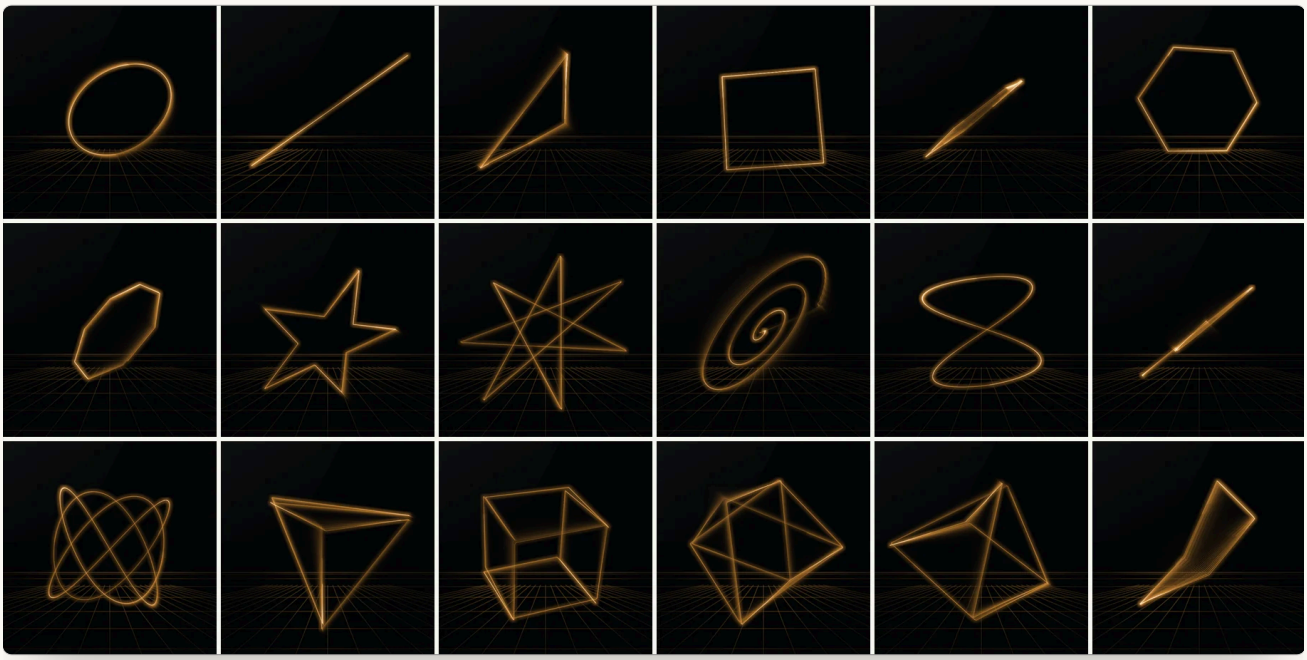
Once the sound has all but gone, the screen holds the light for at least 0.8 of a second, whatever the Afterglow, so the last figure fades slowly rather than vanishing.

> MONO
>
> Turn Width, in the Voice well, down to 0 and every figure folds onto the diagonal: the screen then shows exactly what a listener hears in mono. Every factory program holds up there.

The beams

Each note is up to three beams, added together. Each beam traces one shape over and over, as many times a second as the note's pitch, and everything on the Beam page changes how it travels.

The shapes



The shapes in the grid's order, each held alone at C1 with a little warp, so the glow shows the beam's speed: Circle, Line, Triangle, Square, Pentagon, Hexagon; Octagon, Star, Star 7, Spiral, Lissajous 1:2, 2:3; Lissajous 3:4, Tetrahedron, Cube, Octahedron, Pyramid, and Yours, here a house drawn on the pad. Each was caught as it tumbled, so the Pentagon and Lissajous 2:3 are seen almost edge-on, as lines on the diagonal.

Circle	Traced by its own angle: a pure sine in each channel, a quarter of a cycle apart.
Line	There and back along the screen's diagonal: a triangle wave, the same in both channels, so it sits in the middle. Turn Z swings it from side to side.
Triangle to Octagon	Traced at a steady speed along their edges, so the corners are where the harmonics come from. The more sides, the nearer a circle, and the fewer and higher the harmonics.
Star, Star 7	Star is a five-pointed outline; Star 7 is seven points drawn without lifting the pen, its lines crossing.

Spiral	Three turns winding in from the rim, then a leap back out: the one shape with a jump in it.
Lissajous 1:2, 2:3, 3:4	Two pure sines, one in each channel, in that ratio to the note: 1:2 the note on the left and its octave on the right; 2:3 the octave and the twelfth; 3:4 the twelfth and two octaves up.
Tetrahedron, Cube, Octahedron, Pyramid	Wireframe solids, traced along every edge in one unbroken route, an edge twice where the route needs it. They have depth, so they show Turn, Spin and Perspective in full.
Yours	The beam's own drawing. See Your own shapes.

Every shape is centred and scaled to the same power, so changing the shape never jumps the level, and a solid turned any way keeps its level within about a decibel. Each shape is kept as band-limited tables, and the beam reads the one that fits its note, so corners round off as the pitch rises and nothing folds back as harsh tones on high notes. The voices run at twice your session's rate, which gives the warp's sudden turns room to be rounded too.

Turning

Turning is this instrument's filter sweep. As a shape turns, its corners move between the two channels and towards and away from you, and its harmonics move smoothly with them.

Turn X, Turn Y, Turn Z −180 to +180°; +20, +30, 0° on beam 1	The shape's angle in 3D: turned about X, then Y, then Z. A flat shape turned about Z stays flat on the screen and turns in its own plane.
Spin 0 to 10 Hz; 0.15 Hz on beam 1	Turns the shape on its own, this many turns a second, about the Spin Axis: a slow sweep that never repeats quite the same way, or, fast, a wobble. Every note shares its beam's spin, so a chord turns as one. Each beam spins on its own.
Spin Axis X, Y, Z, Tumble; Tumble on beams 1 and 2, Z on beam 3	X turns the shape about the line across the screen, Y about the line up it, Z about the line into it. Tumble turns it about the screen's diagonal.
Perspective 0 to 100 %; 30 % on beam 1	The near side grows and the far side shrinks: bite and brightness as a shape nears. It acts on a shape with depth: a solid, or a flat shape turned out of the screen's plane.
Size 0 to 100 %; 100 %	How large the beam draws its shape. At 0 only the Jitter's noise is left, which is how the hat programs are made.

SPINNING FLAT SHAPES

A flat shape turning about X or Y turns edge-on as a line across or up the screen: the left channel alone, or the right, a swing from side to side and a deep tremolo. Tumbling, its edge-on line lies on the diagonal, the two sides alike, so it stays in the middle as it turns. About Z it keeps its size and only turns in its own plane, as the factory programs' flat shapes do. A solid keeps its level whichever way it turns.

Warp

Warp is the beam's speed round its shape, after the 1980s phase-distortion keyboards. The shape stays where it is; the beam hurries along one part of it and lingers on another, and the sound changes as the screen's glow does.

Warp 0 to 100 %; 0 %	How far the warp goes.
Bend	Splits each cycle: the first half of the path is traced quickly and the second slowly. At 0 the split is even and the shape plays as drawn; at 100 % the first half takes 1.5 % of the cycle. On a circle, the left channel turns from a sine towards a saw, as on the keyboards; on the screen, the beam races across one half and crawls round the other, which glows.
Resonance Saw, Triangle, Trapezoid	Traces the shape several times within each cycle, once at 0 and sixteen times at 100 %, under a window that fades: falling all the way (Saw), rising then falling (Triangle), or holding then falling (Trapezoid). The number of repeats moves a peak up the harmonics, as a filter's resonance does. On the screen the shape repeats, smaller and smaller as it fades. The windows' lost level is made good.
Square	Traces each half of the path quickly, in a share of its half cycle, all of it at 0 and 3 % at 100 %, then holds there: the beam dwells at the shape's two ends, two bright dots, and the sound turns hollow and square.

High notes warp less, as they did on the keyboards: the beam's fastest stretch never takes less than three samples of your session's rate, and Resonance's peak stays below about 19 kHz at 48 kHz, so the warp stays clean at every pitch. The warp keys each draw what their mode does to a circle's left channel over one cycle: the very wave it makes.

SQUARE AND THE MIDDLE

Square dwells where a circle is furthest across: the left channel at its peak, the right at nothing. Turn the shape 45° with Turn Z and the two sides share it, as the factory programs with Square do.

Bits and Jitter

Bits 2 to 16; 16 (Clean)	Rounds the beam's place to a coarse grid: 16 steps across a circle at 4 bits, 256 at 8. Straight lines turn to stair steps, and the steps are left sharp on purpose: they are the grit of an early converter. It acts before the envelope, so a note keeps its grit as it fades. At 16 it reads Clean and the beam is left as it is.
Jitter 0 to 100 %; 0 %	Adds noise to the beam's place, the amount squared, so the knob's first half is a breath and its last a roar.
Jitter Noise Air, Chip; Chip	Air is white noise. Chip is the home computer's noise register, stepped sixteen times a cycle, so its noise has the note's pitch, as the chip's had. A note that starts from silence starts the register from the same place, so a noise drum hits the same way every time.

Fold

Fold drives the beam past the edge of the screen and folds it back on itself, across and up each on their own, as the wavefolders of the 1970s modular instruments did. A little brightens the sound and rounds the shape's corners into loops; more turns it over and over into knots and petals, and the sound turns bright, hollow and metallic, its harmonics moving as the fold moves. It is the quickest way to take a shape somewhere new.

Fold 0 to 100 %; 0 %	How far past the edge the beam is driven before it is folded: up to eight times. The knob's first tenth fades the fold in, so a touch is a touch.

Fold acts on the beam after Jitter and Bits, so a crushed shape is folded with its stair steps, and before Ring and the envelope, so a note's fold doesn't change as it fades. A beam that leads another leads with its folded shape: Sync, Ring and FM all hear the fold. To make a note brighten as it swells and darken as it dies, send an envelope to Fold in the matrix.

> A FIRST FOLD
>
> Fold a circle: at a quarter it is a soft, bright tone; at half, a reedy, vocal one; all the way, a bright, glassy buzz. A cube or a star folds harder still, each corner a knot.



A circle in each warp mode: Bend at 70 %; Resonance Saw, Triangle and Trapezoid at 20 %; then Square at 70 %. After them, a star on 4 bits, a circle shaken by Chip noise at Jitter 45 %, and beam 1's cube scaled by beam 2's circle an octave up (Ring, below), the One Voice view open beside it while a chord played before dies away.

Pitch and level

Octave −3 to +3; 0 (beam 3: −1)	The beam's octave against the note played.
Semi −12 to +12; 0	Semitones, so a beam can sit a fifth above another, as Sync and Ring like.
Fine −100 to +100 cents; 0 (beam 2: +7)	Fine tuning: a few cents between two beams and they beat.
Level 0 to 100 %; 100 %	The beam's share of the voice. A beam at 0 is silent, but still leads the beam after it.

Three beams



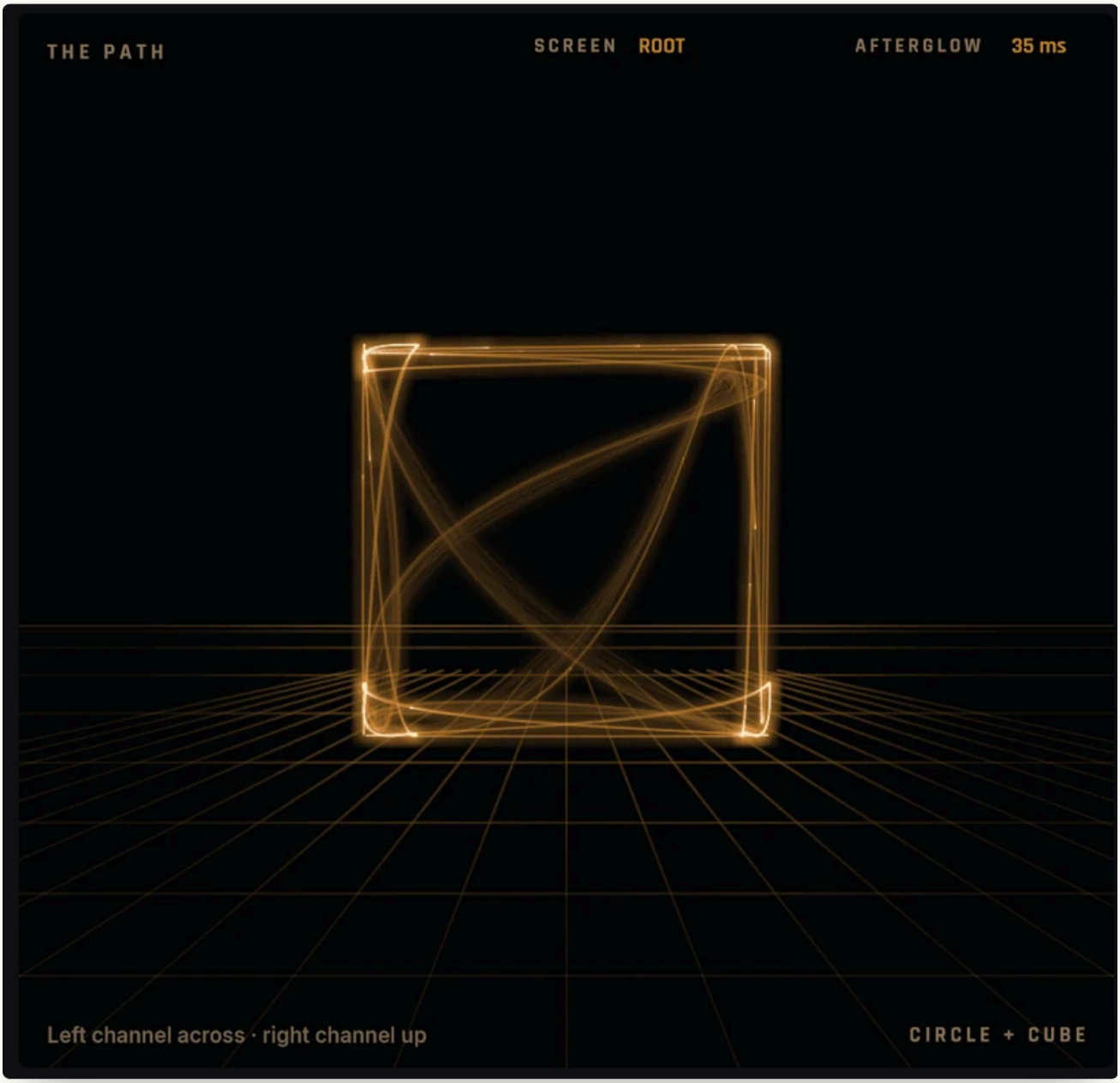
The Beam page editing beam 2: a circle an octave up, On, with Ring on, so it is scaled by beam 1's cube. The line at the right says what Sync and Ring do here.

The Beam keys choose which beam the page edits; every beam has the same controls in the same places, and each key's lamp is lit while its beam is on. As Kiseki starts, beam 1 is the cube and is on; beam 2 is a circle 7 cents sharp, and beam 3 a triangle an octave down, both off. The voice is exactly the sum of its beams, so two shapes draw one figure, and that figure is the sound.

On On or off	Whether the beam sounds.
Sync Beams 2 and 3; off	Restarts the beam at the start of each of the leader's cycles, beam 2's leader beam 1, beam 3's beam 2: the hard-sync tear. Tune the follower up with Octave or Semi, or move its pitch from the matrix, and the tear sweeps.
Ring Beams 2 and 3; off	Scales the beam by its leader, across by across and up by up, so each channel is ring-modulated: sum and difference tones, metallic and bell-like. A beam is scaled by its leader's own shape, not by what the leader is scaled by.
FM Beams 2 and 3; off	Pushes the beam along its path by its leader's place, back and forth as the leader moves: frequency modulation, as the FM keyboards of the 1980s made it (phase modulation, strictly). Bells, glass, metal, electric pianos and growling basses.
FM Depth 0 to 100 %; 25 %	How hard the leader pushes: at 100 %, two whole times round the path either way at the leader's widest. The depth goes as the knob's square, so its first half is the gentle part. The leader's Size pushes harder or softer too.

Sync, Ring and FM can be on together. A leader needn't be heard: beam 1 switched off, or at Level 0, still restarts, scales or pushes beam 2.

FM



Beam 2, a cube, pushed by beam 1 (silent, a circle a fifth up) at an FM depth of 55 %, and folded 35 %: the cube's edges bent into loops.

The pitch of the beam pushed (the carrier) against its leader's (the modulator) sets the sound's colour. Leader and follower at the same pitch, or the leader an octave up or down, give harmonic tones: brass, electric pianos, basses. A ratio that isn't whole gives bells and metal: the leader up a fifth plus an octave (Octave +1, Semi +7), or at an odd Fine, rings and clangs. The depth sets how bright: a little is warmth, a lot is a bright, crowded spectrum.

A circle pushing a circle is the classic FM sound. Any shape can push or be pushed: a leader's corners push in jerks, so a square or a star leader makes the sound harsher, and a pushed cube or star is already rich before the push. As on the FM keyboards, the depth is what moves: send an envelope to B2 FM in the matrix and a bell's strike fades into its ring.

FM, like the warp, is kept clean: the beam reads a smoother copy of its shape the harder it is pushed, and the highest notes are pushed a little less, so the sound doesn't fold back on itself into tones of its own.

A BELL

Beam 1 a circle at Level 0, Semi +7, Octave +1; beam 2 a circle, FM on, FM Depth at 30 %; Amp Decay 2 s, Sustain 0. Then send Env 2 to B2 FM at +40 % in the matrix: each note strikes bright and fades into its ring.

Your own shapes

Any beam can play a shape of your own, drawn point by point over the screen, flat or lifted into depth, and heard as you draw it.



The drawing pad over the screen, drawing beam 1: a house of five points, the peak of its roof lifted towards you, while the beam plays it, tumbling, dimmed behind. On the Beam page, Yours is chosen, with DRAW beside its name.

Yours

The last key in the shape grid, with a pen's nib in its corner, is **Yours**: the beam's own drawing, drawn on its cap and turned as the beam's Turn knobs turn it. Choose it, then click **DRAW** beside its name, or click Yours a second time, and the drawing pad opens over the screen. Each beam has a drawing of its own; choosing another beam while the pad is open draws that beam's.

Before anything is drawn, a beam's own shape is a lightning bolt, the spark in the company's name, leaning a little so that it sits in the middle. Draw over it, or **Clear** it and start afresh.

The drawing pad

The beam goes on sounding behind the pad, dimmed, and every change is heard at once (while a point is dragged, every 60 milliseconds at most). The pad shows which beam is being drawn, how many points it has, and IN DEPTH once any point is lifted. The canvas has a faint grid and the two axes through its middle; the first point is ringed, where the beam starts.

Click	Adds a point after the last, or, on a line, between its two ends. Up to 64 points.
Drag	Moves a point.

Alt-drag	Up or down, lifts a point into depth, towards you or away. A dashed stem shows how far, and its depth shows as a percentage while you hold it.
Double-click, right-click	Removes a point.
Smooth On or off	A smooth closed curve through the points in place of straight lines.
Flat	Puts every point back in the screen's plane.
Clear	Removes every point. It asks first (Sure?): click it again within a couple of seconds.
Done	Closes the pad.

How a drawing plays

The points are joined in order and closed, last to first, with straight lines or the smooth curve, and the beam traces them at a steady speed from the first point, as it does the straight-edged shapes. The drawing is centred and scaled to the same power as the factory shapes, and made into band-limited tables the same way: draw a square on the Square's corners and it plays exactly as the Square. While every point lies in the screen's plane it is a flat shape; lifted into depth, it is a solid, and turns, spins and takes Perspective as one. Fewer than two points draw nothing, and the beam is silent.

The drawings are kept with the project and in presets. A frame table's Shape can be Yours too, each beam then playing its own drawing. Mikazuki, in the factory programs, carries one of its own: a crescent moon, drawn by hand.

> KEEP YOUR DRAWINGS
>
> The pad has no undo. Choosing a program or a preset sets each beam's drawing to its own, or back to the bolt, so keep a drawing you like as a preset (Save As… in the program menu) before you look through the sounds.

The filter

One filter in every voice, after its beams and its Amp envelope, with the old chip's character rather than a clean modern one: its floor, its resonance, its dirt and its growl.

Low, Band, High On or off; all off	The filter's modes, each switched on by itself and added together, as the chip added them: Low and High together make a notch. With none on, the filter is out, as Kiseki starts. It is a state-variable filter, 12 dB an octave.
Early, Late Early	The chip's two filters: below.
Cutoff 30 Hz to 18 kHz; 2 kHz	The filter's frequency, in hertz in both characters, held between the character's floor and its ceiling.
Resonance 0 to 100 %; 30 %	The peak at Cutoff. Early: strong, a Q from 0.53 to 8 over most of the knob, then on to 20, nearly without limit. Late: gentle, 0.71 to 2.6. A ringing filter is held in softly, only near its limit.
Drive 0 to 100 %; 0 %	Blends in the chip's dirt, a saturator before the filter, lopsided on the early chip, so it adds even harmonics. Its level is made good, so a full note keeps its level while the quiet parts come up a little.
Key Follow 0 to 100 %; 0 %	How far the cutoff follows the note played, about C3: at 100 % exactly, an octave up for an octave up.
Batch 0 to 100 %; 50 %	Early only: one chip against another, as real chips differed. It sets where the floor sits, moves the cutoff up to a third of an octave either way, sets how lopsided the dirt is and how far the cutoff climbs.

Early and Late

EARLY	A floor the cutoff never goes under, 150 Hz to 300 Hz as Batch sets it. Strong resonance. Dirt on one half of the wave more than the other. And the cutoff climbs as the note gets louder: a full note lifts it by about 60 % at Batch 50 %, quickly as the sound rises and slowly as it falls. That is the growl: the harder you play, the more it opens.

LATE	Cleaner: from 30 Hz to a ceiling near 12 kHz, gentle resonance, and the dirt even on both halves. Batch does nothing to it.

On the real chip the cutoff's control was far from even, most of its range bunched near the bottom; that was a trait of its control, not its sound, so Kiseki keeps the sound and leaves the knob plain. Both channels pass through the filter alike, so a figure keeps its stereo shape. The Filter envelope (Filter Env, in the Movement well), the matrix and the frame table all move the cutoff; each note's cutoff glides between their steps, so movement never steps.

> THE GROWL
>
> For the chip's bass: Low on, Early, Cutoff low, Resonance high and a little Drive, and play with velocity. Put the mod wheel on Drive in the matrix to growl harder.

Voice and Amp

How notes become voices, how wide and how clean the sound leaves, and how each note rises and falls.

Voice

Poly, Mono, Legato, Chip Chord Poly	Poly gives each note a voice. Mono and Legato play one voice, the last key down; letting it go returns to a key still held. Mono starts the envelopes again with each note; Legato keeps them going while a key is already held. Chip Chord plays every key held on one voice: below.
Glide 0 to 5 s; 0	In Mono and Legato, slides each new note from the last one played, reaching it in about this time.
Voices 1 to 16; 8	How many notes can sound at once in Poly. A new note takes a free voice, then the oldest releasing one, then the oldest of all.
Tune −100 to +100 cents; 0	The whole instrument's tuning.
Bend 0 to 24 semitones; 2	How far the pitch wheel bends: the Bend Range.
Width 0 to 100 %; 100 %	From the full stereo figure to its mono shadow on the diagonal: the middle kept, the sides narrowed. At 50 % the sides are halved; at 0 both channels are the same.
Clean, 1984 Clean	The converter, after Width. 1984 puts the sound through the 1984 keyboards' converter: 12 bits through a five-step expander, so its step grows with the level and its grain follows the sound down as it fades, then the 17 kHz low-pass that smoothed it. Clean leaves the sound as it is.

Chip Chord

The chip had three voices, so its music played chords on one of them by flicking through the notes, a note a frame. In Chip Chord, every key you hold is played by one voice, a note a frame, low to high, round and round: a chord from one voice, with the chip's shimmer.

It needs two keys or more; one key plays as Mono does. Each new key added to the chord strikes the voice again, as Mono does: its envelopes start again from wherever they are, without a click, and the flicking starts again from the chord's lowest key. So a plucked sound, with Sustain at 0, sounds every chord you play, and a chord's own keys, a few milliseconds apart, are heard as one strike. Letting go of the last key releases it.

How fast it flicks is the frame table's **Rate**, on the Frames page, whether the table is on or not: 50 or 60 frames a second, or a note value of your host's tempo. At 1/16 or 1/8 the flicking becomes an arpeggio you can hear, in time. The chord generator gives it a whole chord from one key. The arpeggiator hands it its notes one at a time (in every mode but Chord), so behind the arpeggiator it plays much as Mono does. A large reverb or a long echo blurs the 50 Hz flicker back towards an ordinary chord.

Amp

Attack 1 ms to 20 s; 5 ms	The rise to full, in a straight line.
Decay 1 ms to 20 s; 1 s	The fall to Sustain: within 1 % of it in this time.
Sustain 0 to 100 %; 80 %	The level held while the key is down.
Release 1 ms to 20 s; 600 ms	The fall once the key is let go: 60 dB down in this time.
Level −48 to +6 dB; −6 dB	The instrument's output, after the space and after the screen, so turning it down never shrinks the picture. It moves smoothly, without a click. Each program sets its own.
Chip On or off; off	The Amp envelope in the chip's own timing: its level a counter of 256 steps, each of Attack, Decay and Release taken to the nearest of its sixteen rates (an attack from about 2 ms to 8 s; a decay or release about three times as long), the fall in steps that lengthen as the level drops, and Sustain one of its sixteen levels. The knobs keep their own times; the chip plays the nearest it has.

A note's level follows its velocity: the softest note plays at about a third of the level of the hardest. The sustain pedal holds notes whose keys are up. The Warp and Filter envelopes, Env 2 and Env 3, are in Movement.

Movement

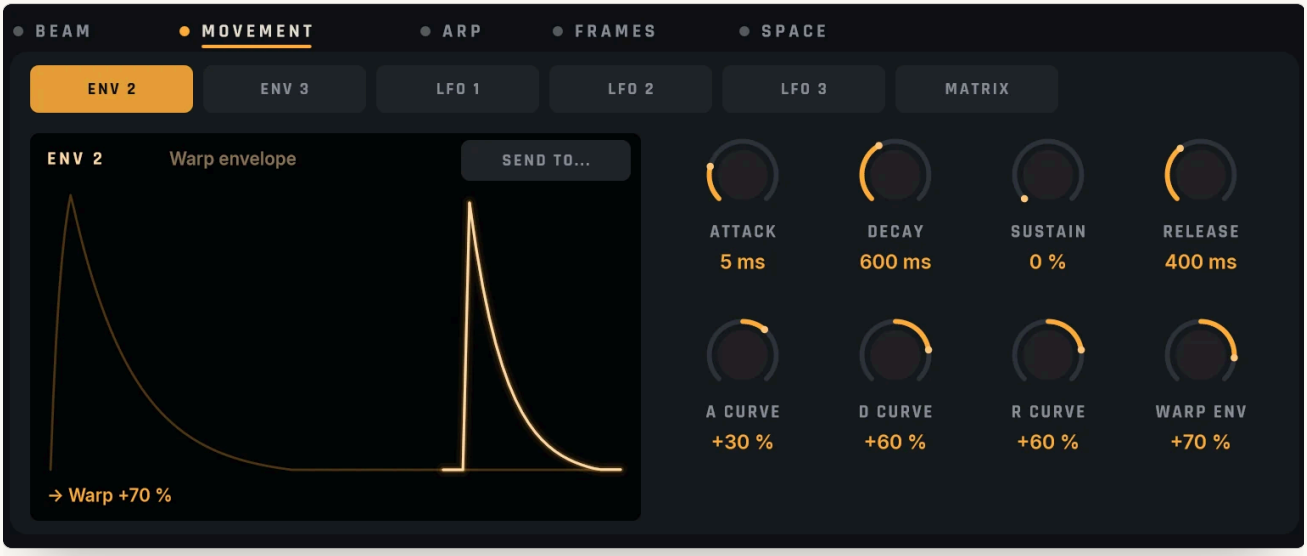
Two envelopes beside Amp's, one for the warp and one for the filter, three LFOs, and a twelve-slot matrix to send them, and everything you play, to the voice and to every part of every beam.

The Movement well

Macro 1, Macro 2 0 to 100 %; 0 %	Two knobs for the matrix. As Kiseki starts, Macro 1 turns every beam about Y, half a turn at full, and Macro 2 warps them all, the whole way at full.
Warp Env −100 to +100 %; 0 %	Sends Env 2, the Warp envelope, to every beam's Warp: at +100 % with the envelope at full, Warp moves across its whole travel. Below 0 it closes the warp instead.
Filter Env −100 to +100 %; 0 %	Sends Env 3, the Filter envelope, to the cutoff, the way the Cutoff knob turns.

The 1984 keyboards gave their warp an envelope of its own, so Kiseki does: a pluck of warp at the start of each note is a quick Env 2 with Warp Env up.

The Movement page



Env 2, the Warp envelope, on the Movement page while a note plays: its shape as its knobs set it, the note's own trace over it, and Warp Env at +70 %, shown as where it is sent.

Keys along the top choose **Env 2**, **Env 3**, **LFO 1** to **LFO 3** or the **Matrix**. The picture shows the chosen modulator large: its shape as its settings draw it and, while a note sounds, the newest voice's value over the last three seconds tracing over it (a fast LFO's last cycle and a half). Its controls sit on the right. **Send to...**, at the picture's top right, sends it somewhere new: choose a destination and it takes the first free matrix slot, at +30 % (a Pitch at +4 %, about a semitone). The line at the foot of the picture shows where it goes, the envelope's own amount first; click the line to open the Matrix and set how much.

Env 2 and Env 3

Env 1, the Amp envelope, shapes each note's level and is a matrix source too. Env 2 and Env 3 are heard only when their own amounts, Warp Env and Filter Env (on their pages as well as in the well), or a matrix slot send them.

Attack 1 ms to 30 s; 5 ms	The rise to full.
Decay 1 ms to 60 s; 600 ms, 800 ms	The fall to Sustain.
Sustain 0 to 100 %; 0, 20 %	The level held while the key is down.
Release 1 ms to 60 s; 400 ms, 500 ms	The fall to nothing once the key is let go.
A Curve, D Curve, R Curve −100 to +100 %; +30, +60, +60 %	Each stage's shape: at 0 a straight line, above it fast at first and easing in, below it slow at first.

As Kiseki starts, both are plucks: Env 2 falls to nothing over 0.6 of a second, Env 3 to a fifth over 0.8.

The LFOs

Wave Sine, Triangle, Saw Up, Saw Down, Square, Sample & Hold, Smooth Random	The shape. Sample & Hold jumps to a new random level each cycle; Smooth Random glides between them. LFO 1 starts as a Sine, LFO 2 a Triangle, LFO 3 a Smooth Random.
Rate 0.002 Hz to 40 Hz	The speed, with Sync off. At its slowest, one cycle takes over eight minutes. LFO 1 starts at 5 Hz, a vibrato; LFO 2 at 0.3 Hz; LFO 3 at 0.08 Hz.
Delay 0 to 20 s; 0	Brings the LFO in gradually after each note starts.
Sync On or off	Division in place of Rate, at your host's tempo.
Division 64 Bars to 1/32; 1 Bar	One cycle's length at your host's tempo: from 64 bars down through dotted and triplet values to a thirty-second note.

Key Sync On or off	On, each note starts the LFO afresh. Off, each voice's LFO runs at a phase of its own, so the notes of a chord sway apart. On for LFO 1 as Kiseki starts.

The matrix

Twelve slots, in two columns of six. Each is a **Source**, an optional second source it is multiplied by (×, the Via), a **Destination** (→) and an **Amount** from −100 to +100 %. Click a key for its menu (the destinations come in groups: Voice, Every beam, Beam 1, Beam 2, Beam 3, LFO rates, FM and Fold); drag the amount bar sideways, Shift for fine, and double-click it to empty it. A slot's number is lit while it sends something. Slots on the same destination add up.

SOURCES

SOURCE	RANGE AND MEANING
VELOCITY	0 to 1: the note's velocity.
KEY	−1 to +1: the note, 0 at C3, ±1 five octaves either way.
AFTERTOUCH	0 to 1: channel or polyphonic pressure, whichever is greater for the note.
MOD WHEEL	0 to 1.
PITCH BEND	−1 to +1.
ENV 1, ENV 2, ENV 3	0 to 1. Env 1 is the Amp envelope; Env 2 the Warp envelope; Env 3 the Filter envelope.
LFO 1, LFO 2, LFO 3	−1 to +1.
MACRO 1, MACRO 2	0 to 1: the two knobs in the Movement well.
RANDOM	−1 to +1: a new value for each note, held for its length.
CONSTANT	Always 1: a fixed offset.

DESTINATIONS

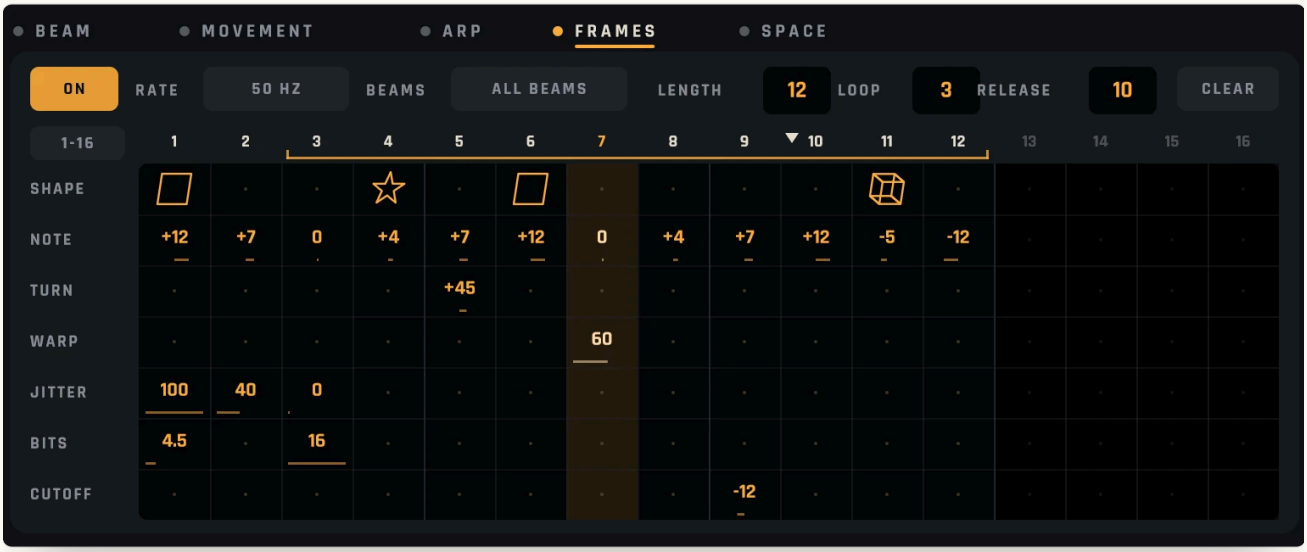
DESTINATION	AT AN AMOUNT OF 100 %, WITH THE SOURCE AT 1
PITCH	24 semitones.
CUTOFF, RESONANCE, DRIVE	Moves the knob across its whole travel, the way the knob turns.
AMP	The note's level: silent at −100, double at +100.
WARP, TURN X, TURN Y, TURN Z, SIZE, PERSPECTIVE, BITS, JITTER	Every beam at once, added to each beam's own. A Turn by a whole turn; the rest across the knob's whole travel.
B1, B2, B3: WARP TO JITTER, LEVEL, PITCH	One beam's own, the same way; its Pitch by 24 semitones beyond its Octave, Semi and Fine.
LFO 1 RATE TO LFO 3 RATE	Sixteen times as fast at +100, a sixteenth at −100.
B2 FM, B3 FM	The beam's FM Depth, across the knob's whole travel (FM must be on).
B1 FOLD, B2 FOLD, B3 FOLD; FOLD	One beam's Fold, or every beam's at once, across the knob's whole travel.

Each note works out its own movement every 32 samples, about two thirds of a millisecond at 48 kHz: its envelopes, its LFOs, the matrix, then its beams' and its filter's settings. So velocity, key, Random and a key's own pressure give every note its own amount, and a turn from the matrix turns each note its own way, while Spin turns them all as one.

As Kiseki starts, slot 1 sends LFO 1 through the mod wheel to Pitch at 1 %: a gentle vibrato, about a quarter of a semitone either way with the wheel all the way up. Slot 2 sends Macro 1 to every beam's Turn Y at +50 %, and slot 3 Macro 2 to every beam's Warp at +100 %.

Frame tables

The trick behind most home-computer music: an instrument steps through a short table fifty times a second, changing its shape, its note or its noise every frame. The chip arpeggio, the drum made of noise and then a falling tone, the shape that flickers between two forms: each is a frame table.



The Frames page with a table of twelve steps while a note plays: a burst of noise and crunch on the square, then a chip arpeggio, a star flicking in, a turn, a warp, a cutoff step and the cube; looping from step 3, released to step 10. Step 7 is playing.

The page

On
On or off; off

Plays the table. It plays only while it sets anything.

Rate
50 Hz, 60 Hz, 1/8, 1/16, 1/32, 1/64, 1/16T, 1/32T; 50 Hz

How fast the steps go: 50 or 60 frames a second, as the European and the American screens ran, or a note value of your host's tempo. Chip Chord flicks at this rate too.

Beams
All Beams, Beam 1, Beam 2, Beam 3; All Beams

Which beams take the table's Shape, Turn, Warp, Jitter and Bits. Note and Cutoff are the voice's, so they always apply.

Length
1 to 32; 8

How many steps the table has. Steps past it are dimmed.

Loop
—, or a step

While the key is held, the table goes round from its end back to this step. Without one, it runs to its end and holds there.

Release −, or a step	When the key is let go, the table jumps to this step and runs on to its end. Without one, it runs on from where it is.
Clear	Empties the table. It asks first (Sure?): click it again within a couple of seconds.
1-16, 17-32	Which sixteen steps the grid shows.

Length, Loop and Release step down when you click their left halves and up when you click their right halves; drag them up or down, or turn the mouse wheel over them. Over the grid, the step numbers run along the top, the loop is bracketed from its step to the end, a small mark shows the release step, and the step the newest note is on is lit.

The steps

Shape As the knobs set it, or any shape	The shape the step plays: click the cell for a menu of the eighteen, Yours among them (each beam plays its own drawing).
Note −24 to +24 semitones	Added to the note played.
Turn −180 to +180°, in steps of 5	Added to Turn Y.
Warp 0 to 100 %	In place of Warp, the knob's and the matrix's.
Jitter 0 to 100 %	In place of Jitter.
Bits 2 to 16, in halves	In place of Bits (16 is Clean).
Cutoff −48 to +48 semitones	Moves the note's cutoff from where the knob, the matrix and the Filter envelope put it.

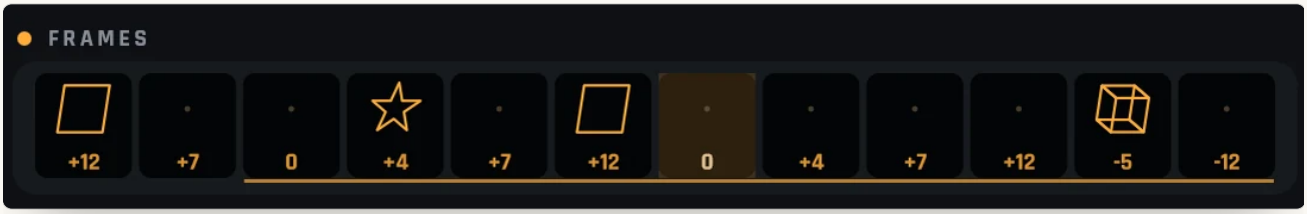
A cell left blank, a small dot, leaves its control to the knob and the matrix. Drag a cell up or down to set it (Shift for fine), or turn the mouse wheel over it; a blank cell starts at no change the moment you touch it (Bits at 8). A double-click or a right-click blanks it again.

How it plays

Each note starts the table at step 1 and moves on a step every frame, every note in its own place. While the key is held it runs to the end of the table and holds there, or goes round from the end to the Loop step; when the key is let go it jumps to the Release step, if there is one, and runs on to the end, the loop left behind. Each step lasts a whole number of Kiseki's 32-sample runs, so it lands within about two thirds of a millisecond of its time; at 50 frames a second, at 48 kHz, exactly.

The table is the instrument's data, as a tracker's instrument tables were, not host parameters: it is kept with the project and in presets, and changing it marks the program as changed. On, Rate and Beams are host parameters.

The frame strip



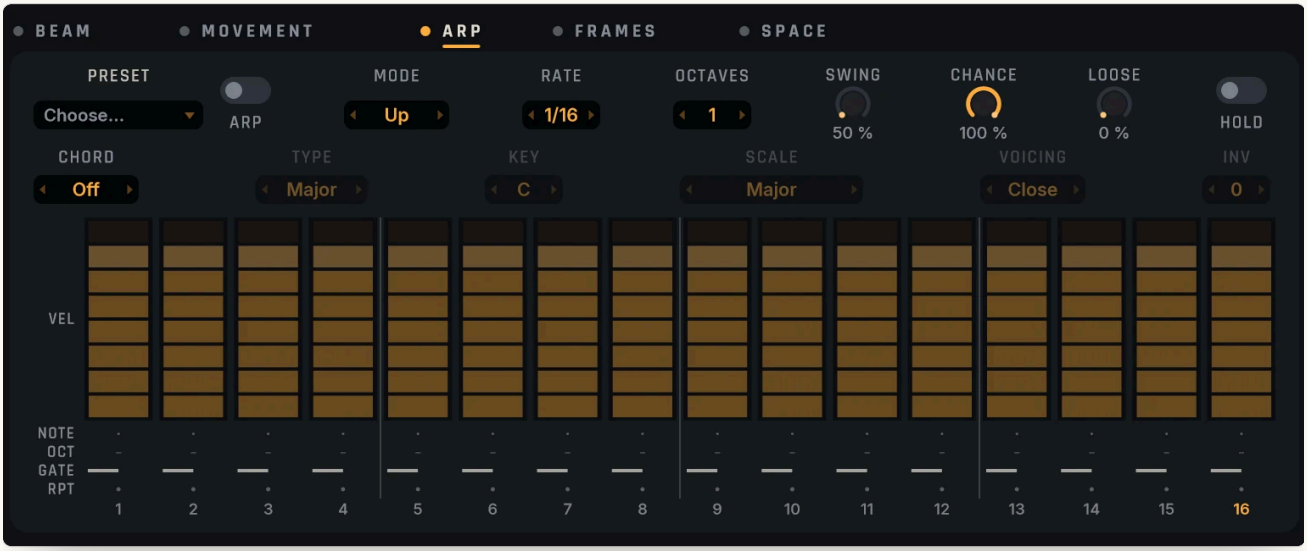
The frame strip under the screen for the table above: each step's shape, a dot where the knobs' shape stays, its note beneath, the step playing lit and the loop underlined.

Under the screen, the strip shows the table at a glance: each step as the small shape it plays, a dot where it leaves the shape to the knobs, its note beneath, the step playing lit and the loop underlined. A Yours step draws beam 1's drawing. The strip dims while the table is off, and says so while the table is empty. Click it to open the Frames page.

> THREE WAYS IN
>
> A chip arpeggio: Note 0, +4 and +7 in three steps, Loop at 1, at 50 Hz, and one key plays its major chord, a note a frame. A drum: a high note with Jitter at full in the first step, then the note falling step by step. A flicker: a few steps, a shape and a turn in each, looping (Kitsunebi, in Textures, flickers this way).

Arpeggiator and chords

The Denki Digital arpeggiator and chord generator stand between your keys and the voices. Each key can become a chord, and the arpeggiator plays what is held through a sixteen-step pattern.



The Arp page as Kiseki starts: the arpeggiator and the chord generator off, the pattern below.

The keys go first to the chord generator, then to the arpeggiator, then to the voices. While both are off, the keys pass straight through. On this page the choosers step with the arrows at their ends, and list every choice when clicked in the middle; the small knobs work as the rest of the panel's.

The arpeggiator

Preset 59, in five styles	Classical, Electronic, Progressive, IDM and Ambient patterns. Loading one sets every arpeggiator and chord setting but the chord key.
Arp On or off	Switches the arpeggiator on.
Mode Up, Down, Up-Down, Played, Random, Chord, Converge, Thumb, Walk	The order of the held notes. Chord plays them all at once; Converge from the outside in; Thumb returns to the lowest between each of the others; Walk takes a random step up or down each time.
Rate 1/4, 1/8., 1/8, 1/8T, 1/16, 1/16T, 1/32	The length of a step.

Octaves 1 to 4	How many octaves the notes climb through.
Swing 50 to 75 %	Pushes every second step late: 50 % is straight.
Chance 0 to 100 %	How likely each step is to play. The pattern's first step always does, to hold the bar.
Loose 0 to 100 %	Lets hits fall a little late and a little softer, at random, like a hand or a worn tape.
Hold On or off	Keeps notes playing after you let go, until you play a new chord.

The chord generator

Chord Off, Chord, Scale	Chord plays one chord type on every key. Scale plays the chord that belongs to each key in a key and scale: in C major, D plays D minor. A key outside the scale plays the chord of the degree below it.
Type 20 types	In Chord mode: Major, Minor, Sus2, Sus4, Maj7, Min7, Dom7, Maj9, Min9, Add9, Power, Dim, Aug, Min11, 6/9, Quartal, Maj7#11, 7sus4, Min Add9, Cluster.
Size Triad, Seventh, Ninth	In Scale mode, in Type's place: how high the chord is stacked in thirds of the scale.
Key C to B	The scale's key, in Scale mode.
Scale 18 scales	Major, Minor, Harmonic Minor, Melodic Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Minor Pent, Major Pent, Blues, Whole Tone, Hirajoshi, In Sen, Phrygian Dom, Lydian Dom, Hungarian.
Voicing Close, Open, Wide	Open raises every second note an octave; Wide adds the root an octave below.
Inv 0 to 3	Inversion: lifts the lowest notes an octave.

The pattern

Velocity	The bars. Drag across them to draw; the very bottom rests the step. A right-click rests a step or brings it back; a double-click sets it to 100.

Note Auto, or 1 to 8	Auto plays the mode's next note. A number plays that chord tone, counting up from the lowest held note; past the last, the tones repeat an octave up. Click to step up, right-click to step down, or use the mouse wheel.
Oct −2 to +2	Shifts the step's note by octaves. Click to step through 0, +1, +2, −2, −1; right-click goes back.
Gate Short, Half, Long, Tie	Click to change. Tie holds the note into the next step.
Rpt 1 to 4	Ratchet: the step repeats its note up to four times. Click to change.
Step numbers	Click a number to end the pattern there. The step playing lights.

While the host plays, the steps sit on its grid. Stopped, the arpeggiator runs at the host's tempo from the first key, and a pattern that opens with rests starts on its first sounding step, so a key always speaks as it goes down. With Chip Chord, the chord generator's chord from one key is played by one voice, a note a frame.

> PROGRAMS
>
> The eight Arps programs bring their own patterns: hold a chord, or the one note their notes ask for. Any other program switches the arpeggiator and the chord generator off, and leaves the pattern for next time.

The space, MIDI and the host

After the voices, Width and the converter, four effects, left to right as the sound passes through them: a chorus, Kodama's drum echo, Shimo's airy reverb and Kumo's dark one. Each is the engine of its own Denki Digital instrument, with its own controls, ranges and defaults.



The Space page showing the echo, with the chorus, the echo, Shimo and Kumo all on: Kodama's drum turning past its heads, the repeats it leaves along a timeline, and the echo's level over the last three seconds.

All four are off as Kiseki starts: the beam's own figure first, and each program chooses its own space. On Root and All the screen draws the beams before the space, so the figure stays clean however wet the sound. Set it to Wet and it draws what the space makes too: an echo's repeats follow the figure, and a reverb is a haze about it.

The Space page

Along the top runs the chain, **Chorus**, **Echo**, **Shimo** and **Kumo**, in the order the sound goes, each key's lamp lit while its effect is on. Click a key to show that effect below; the one shown is kept with the project. Below it come the effect's switch and choices, a small live picture on the left, and its knobs in two rows on the right. The echo crossfades as it switches. Shimo and Kumo are switched as with their Trails on: switched off, what rings rings out, and a new note passes dry.

CHORUS	Off, Slow, Fast or Deep: the Denki Digital chorus, as a send. The picture draws its two read points, left and right, sweeping against each other over four seconds at the mode's own rates and depths; on the screen the figure doubles and breathes.

ECHO	Kodama's magnetic drum echo, with its preamp drive. Above: On, Echo, Repeat or Swell, the four heads, Sync and its note value. Below: Drum Speed, Feedback, FB Tone, Mix, Drive, Color, Crunch; Noise, Age, Bias, Wow, Flutter, Head Wear, Motor and Output. The picture shows the drum turning past its heads, lit where they play, and the repeats they leave along a timeline. Each head's level and tone, and Kodama's HQ switch, are host parameters and program settings, not on the page.
SHIMO	Shimo's reverb for clear, bright space. Above: On, Air, Glass or Breath, and Sync for Pre-delay. Below: Pre-delay, Size, Decay, Mix, Air; Bass, Low Cut, Diffusion, Motion, Width and Ducking. The picture draws the decay as the knobs set it, and the tail as it sounds.
KUMO	Kumo's reverb that behaves like weather. Above: On, the algorithm (Dark, Rise, Dream, Rain or Light), the width (Narrow, Medium or Wide), and Sustain, Dream's frozen pad. Below: Decay, Filter, Depth, Mix, X; Stretch, Rate, Pan and Wave. The picture draws the decay and traces the tail.

The echo's and the reverbs' pictures also trace each effect's level over the last three seconds. The controls do what they do in their own instruments, and their owner's manuals describe them in full: Kodama for the echo, Shimo and Kumo for the reverbs.



The Space page showing Kumo, on Dream: its decay drawn as its knobs set it, and its tail as it sounds.

> KUMO'S SUSTAIN
>
> Kumo's Sustain freezes what it hears into a pad and holds it, until you switch it off on the Space page or choose another program. Hold a chord on Chinmoku, in Textures, and switch it on.

Kodama's preamp is oversampled, which takes 42 samples. Kiseki delays the way round the echo to match and tells your host of the 42 samples always, so switching the echo never moves the sound in time.

MIDI and the host

CHANNELS	Kiseki plays from every MIDI channel.
NOTES	Note on and off, with velocity: through the chord generator and the arpeggiator, then to the voices.
PITCH BEND	Bends by Bend Range; also a matrix source.
MOD WHEEL (CC1)	A matrix source. Slot 1's vibrato is on it as Kiseki starts.
SUSTAIN (CC64)	Holds released notes.
AFTERTOUCH	Channel and polyphonic pressure, as one matrix source.
ALL NOTES OFF, ALL SOUND OFF	Let every note go, each through its Release, and reset the arpeggiator and chords.
TEMPO	The host's tempo and position drive everything synced: the LFOs, the frame table and Chip Chord at a note value, the arpeggiator, the echo and Shimo's Pre-delay. The standalone runs at 120 BPM.
AUTOMATION	Every control. Map a controller to a parameter in your host, or learn it on the panel (MIDI learn, below).
PROGRAMS	Your host sees the 13 factory programs as Kiseki's program list.
OUTPUT	Stereo, or mono on a mono track, the two sides mixed.
LATENCY	42 samples, Kodama's, reported always.
THE PROJECT	Keeps every setting, the program or preset by name, the frame table, each beam's own drawing, the page shown, the beam edited, the Space page's view, what the screen draws, the Afterglow, the MIDI controllers learned, and the window's size, keys and octave.

MIDI learn

The knobs, keys and menus on Kiseki's panel can be moved by a knob or fader on your MIDI controller. Right-click it (Control-click on a Mac), choose Learn MIDI control, and move the hardware. While Kiseki waits, a thin outline breathes round the control (on a knob, its value reads MOVE A CONTROL); once learned, the controller's number shows there for a moment.

Learn MIDI control	Waits for the next controller (CC) to arrive, on any channel. While it waits, the menu reads Waiting for a MIDI control… (click to stop).

Forget CC 74	Shown when the control has one: lets that controller go.
Knob	Shown when the control has one: what kind of knob it is, as learning found it (ticked). Choose another if it guessed wrong: Ordinary knob, or one of three kinds of Endless knob.
Use these for every new Kiseki	Keeps the controllers learned now as the starting set for every Kiseki you add from now on. Projects keep their own. Choose it with none learned to start new ones with none again.
Forget every MIDI control	Lets every learned controller go, on every control.

A controller moves one control, and a control answers one controller: learning a controller already in use moves it to the new control. Its whole travel, 0 to 127, sweeps the control's whole travel, as the mouse does; a switch turns on from the middle up, and a choice steps evenly through its choices. The moves reach your host as the mouse's do, so it writes them as automation and undo takes them back.

Controls never jump. An ordinary knob sends where it is, so when it and the control disagree (a project just opened, a new program, the mouse moved the control) the control waits until the knob reaches it, then follows; meanwhile its value reads TURN UP or TURN DOWN, with a steady outline round it. An endless knob, one that turns round and round, sends only a little up or a little down, so the control moves on from wherever it is. Learning tells the two apart from the first few turns, so turn the knob a little way after it is learned before you judge it.

The controllers learned are kept with the project; a project saved before Kiseki had MIDI learn opens with none. A learned controller still reaches Kiseki as before: learn the mod wheel (CC1) onto a knob and it turns the knob and goes on being the mod wheel. Notes, pitch bend, aftertouch, bank select and the like are never learned.

The starting set is a small file, `%APPDATA%\Denki Digital\Kiseki\midi-map.json` on Windows and `~/Library/Application Support/Denki Digital/Kiseki/midi-map.json` on a Mac.

The Arp page's knobs, menus and switches learn too; its step pattern does not.

> HOSTS
>
> The controller reaches Kiseki only as notes do: in Logic Pro, on the track selected or armed; in Live, on a track armed or monitoring. A knob your host has kept for itself (Logic's Controller Assignments, Live's MIDI Map) stays your host's: free it there, or learn another.

Factory programs

Twelve programs and Init. Kiseki is at its best on atmospheres, and the bank is those: pads, textures, bells and an arpeggio, made to be played low, with long tails, in the spaces that come with it. Each has a note of how it plays best, shown in the program window for four seconds as it loads.

Each program holds up in mono and sits in the middle. Each line below gives the program's note, then what it does. A program sets every control, its frame table (empty if it has none) and each beam's drawing (the bolt if it has none).

Init

00 Kiseki

The cube turning slowly: the Init program, one step back from Kasumi, where a new Kiseki opens. Every control at its default: beam 1's cube tumbling at 0.15 Hz, the filter out, the space off.

Pads

01 Kasumi

Spring haze: a warm pad whose FM breathes slowly. Hold low chords. Beam 2, a circle, pushed by a silent circle an octave up, LFO 2 breathing the depth; a Lissajous 2:3 beside it, tumbling slowly; the Late low-pass; the Slow chorus and Shimo's Air.

02 Kagerou

Heat shimmer: a beam two and a half octaves up fades in over six seconds. Beam 2, a pentagon two octaves and a fifth up, brought in by Env 2; a circle an octave down with a breath of Air noise; vibrato arriving after a second and a half; Shimo's Breath.

03 Mizukagami

A water mirror: glassy FM and a little Fold, shimmering. Play harder for more glass. Beam 2 pushed by a silent circle two octaves up and folded a little, velocity deepening the push; a hexagon an octave up, its Resonance warp swayed by LFO 2; Kumo's Light and Shimo's Air.

04 Tooboe

A distant howl: each note starts a little flat and slews up into pitch. Play a slow line. Env 2 bends each note up from a third of a semitone flat; vibrato after a second; Legato with a short glide; a resonant band-pass; Kodama on dotted quarters and Kumo's Dream.

Textures

05 Shiosai

The sound of the surf: noise swelling and falling in slow waves. Hold a low note. A line shaken by Air noise over a low circle, through the band- and low-pass; LFO 2 sweeping the cutoff and the level, LFO 3 the noise; Kumo's Rain.

06 Kitsunebi

Foxfire: stars and a spiral flickering in time, folded. Let the host run. A frame table flicks beam 1 through the star, the heptagram, the spiral and the hexagon in sixteenths, turning it as it goes; folded, a spiral an octave up beside it; the Early filter; Kodama's Swell and Shimo's Glass.

07 Sabi

Rust: crushed, folded and pushed a tritone apart, through the 1984 converter. An octahedron on 5 bits, folded, LFO 3 wandering the fold; beam 2, a square a tritone up, pushed by it, LFO 2's sample-and-hold on the depth; the Early filter driven, Batch 85 %; Kodama's Repeat, worn; Kumo's Dark.

08 Mikazuki

A crescent moon drawn by hand, a synced beam sweeping across it. Open Draw to change it. Beam 1 your own shape, the crescent, turning slowly; beam 2, a triangle an octave and a fourth up, synced to it, LFO 2 sweeping its pitch; a circle an octave down; Kodama, worn, and Kumo's Rise.

09 Chinmoku

Silence: a deep drone whose fold slowly wanders. Play it very low. The cube tumbling slowly, folded a little, LFO 3 wandering the fold; a circle an octave down; the Late low-pass at 700 Hz, following the keys a little; Kumo's Dark.

Bells

10 Kane no Koe

The voice of the bell: struck bright by FM, fading into its ring. Single notes. A circle pushed by a silent circle an octave and a fifth up, a little flat, the not-quite-whole ratio bells have; Env 2 adds to the push at the strike and lets it fade; a circle an octave down; Kodama on dotted quarters and Kumo's Dream.

11 Yoin

Lingering resonance: hold a note and it dies; tap it and it rings on. Decay a quarter of a second, Sustain 0, Release seven seconds; a circle pushed by a silent circle two octaves up and folded a touch; an octagon an octave up, spinning; Kodama and Kumo's Rain.

Arps

12 Hoshizora

A starry sky: sparse plucks at random over three octaves. Hold a chord, the host running. The arpeggiator at random in eighths, Chance 65 %, Loose 35 %, the chord generator giving each key its ninth chord in A minor pentatonic; a triangle with a little Resonance warp, the chip's envelope; Kodama on dotted eighths and Shimo's Air.

Ways to start

A PAD	Kasumi or Kagerou, chords held low; Mizukagami for glass; Tooboe for a voice.
A BED OF SOUND	Shiosai or Chinmoku held under everything; Chinmoku with Kumo's Sustain for a frozen bed.
MOVEMENT	Kitsunebi or Hoshizora with your host playing; Sabi's slow wander; Mikazuki's sweeping sync.
BELLS	Kane no Koe for the struck bell; Yoin to tap and let ring.
YOUR OWN SHAPE	Mikazuki: open Draw and change the crescent.

BUILDING YOUR OWN	Init, then a shape, Warp and its mode, Turn and Spin; a second beam with Sync, Ring or FM; Fold; the filter; then a frame table, or a shape you draw.

Programs and your presets

Kiseki keeps two kinds of sound: the factory programs it ships with, which never change, and your own presets, which are plain text files you can keep, copy and share.

Click the program name at the top of the panel to open the program menu. The arrows step through the sounds in turn: the factory programs, then your own, then any designer banks.

The program menu

Factory programs	Listed first, under Factory: 00 Kiseki, the Init program, then a menu for each group, Basses, Leads, Pads, Arps, Chip Chords, Drums, Bells and Textures. Choosing one sets every control, the frame table and each beam's own shape, and its note of how it plays best shows in the program window for four seconds. Your changes to it are kept with the project until you choose another.
User	Your own presets, grouped by the category you gave them.
Designer	Banks of presets from other sound designers, if you have added any. They load like your own, but can't be overwritten: save a changed one under a new name.
Save	Saves the current sound over your own preset of the same name. Only offered while one of your own is loaded.
Save As...	Saves the current sound as a new preset, with a name, a category and an author.
Rename...	Renames your own preset, and its file with it.
Delete...	Deletes your own preset. Its file goes, so this can't be undone.
Import Preset...	Adds a preset file someone has sent you to your own.
Export Preset...	Saves a copy of your own preset wherever you choose, ready to send.
Open Preset Folder	Shows the folder in File Explorer, or in the Finder on a Mac.

A preset holds every control, the arpeggiator and chord settings while either is on, the frame table while it sets anything, and each beam's own drawing while it is not the bolt. Loading a preset without a frame table empties the table, and one without a beam's drawing puts the bolt back on that beam, so save a drawing or a table you want to keep before you choose another sound. While one of your own is loaded, the program window shows USR in place of a number.

Where they live

Your presets are in `Documents/Denki Digital/Kiseki/Presets`, one `.txt` file each, in your Documents folder on Windows and on a Mac alike. Designer banks go beside them, in `Documents/Denki Digital/Kiseki/Banks`, one folder per bank. The files are readable text, so a preset can be sent in an email as easily as attached. Back the folder up with your music.

Your host saves the whole sound with every project as well, so a project always opens as you left it, whether or not the preset is still in the folder.

Installing and unlocking

Installing on Windows

1. **Close your music software.** Windows can't replace a plugin that is in use.
2. Run `Kiseki-1.1.0-Windows.exe`. Windows asks whether to allow it to make changes; the publisher should read Denki Digital Limited. If it says Unknown publisher, don't run it, and write to **hello@denkidigital.com**.
3. **If Windows shows "Windows protected your PC",** choose More info, check the publisher, then Run anyway. Windows says this about new releases while it learns to recognise them.
4. **Choose what to install.** The VST3 plugin always installs; the standalone application is ticked too.
5. **Open your music software.** Kiseki is under Denki Digital, listed as Kiseki Synth. If it isn't there, ask your host to rescan its plugins.

PLUGIN	`C:\Program Files\Common Files\VST3\Kiseki.vst3`
STANDALONE	`C:\Program Files\Denki Digital\Kiseki`, and in the Start menu under Denki Digital
THIS MANUAL	`Kiseki Manual.pdf` beside the standalone, and in the Start menu under Denki Digital Manuals
YOUR PRESETS	`Documents/Denki Digital/Kiseki`
LICENCES	`Documents/Denki Digital/Licences`

Installing on a Mac

Kiseki runs on macOS 12 or later, Apple silicon or Intel.

1. **Close your music software.**
2. Open `Kiseki-1.1.0-Mac.pkg`. It is signed by Denki Digital Limited and notarised by Apple, so it opens without a warning. If your Mac says it can't check it for malicious software, don't open it, and write to **hello@denkidigital.com**.
3. **Agree to the licence, and choose what to install.** The VST3 plugin, the Audio Unit and the standalone application are all ticked; Customise leaves any out. Your Mac asks for your password, as it does for any plugin installed for everyone on the computer.
4. **Open your music software.** Kiseki is under Denki Digital, listed as Kiseki Synth: Logic Pro and GarageBand find the Audio Unit as they start, and other hosts may need to rescan their plugins.

VST3 PLUGIN	`/Library/Audio/Plug-Ins/VST3/Kiseki.vst3`
AUDIO UNIT	`/Library/Audio/Plug-Ins/Components/Kiseki.component`
STANDALONE	`/Applications/Denki Digital/Kiseki/Kiseki.app`
THIS MANUAL	`Kiseki Manual.pdf` beside the standalone, whichever parts you install, and on www.denkidigital.com, from Kiseki's page
YOUR PRESETS	`Documents/Denki Digital/Kiseki`
LICENCES	`Documents/Denki Digital/Licences`

Unlocking

Your licence comes with your order, in the email and on the order page: a few lines of text that begin Denki Digital licence and end with a signature. It carries your name, and nothing in it needs the internet: no account and no activation, now or later.

1. **Copy all of it,** from Denki Digital licence to the end of the signature line. Then click the small key at the right-hand end of the header, between the keys glyph and the window-size control, and choose Paste licence from the clipboard.
2. **Or keep it as a file:** paste it into a plain text file (ending `.txt` or `.denkilicence`) and drop that onto the panel, or choose Load licence file... from the same key.
3. **That's all.** The key's menu now reads Licensed to your name, and every instrument the licence covers unlocks at once, in every open project.

Before it is unlocked, Kiseki works fully, with no time limit, and rests for two seconds once a minute: the sound fades out and back. A small Demo notice on the panel says so, with Buy and Load licence; its cross closes it until the panel is next opened. The key's menu also shows the licences folder, and the notices for the fonts and code inside.

The window

The window-size control, the small square of corner marks at the right-hand end of the header, sets the window's size, from 60 % to 160 % of its natural size, with Fit to screen for the largest that fits. You can also drag the window's corner. The size is kept with your project, and the window never opens bigger than the screen it is on. In the standalone application, Full screen in the same menu, or the F11 key (Control-Cmd-F on a Mac), fills the whole screen with the panel; the same key or Esc brings the window back.

The keyboard glyph beside the licence key shows or hides the on-screen keys. Without them the panel is 1360 by 704 points instead of 770, so a window that fills the screen opens larger. The first time Kiseki opens, the keys show; on a laptop the panel opens a little smaller to make room for them. Whether they show, and the octave they start on, are kept with the project.

On a Mac: where this manual says Ctrl, press Cmd; where it says Alt, press Option; and a right-click is a Control-click, or a two-finger click on a trackpad.

Ableton Live on Windows: if the window looks soft, right-click the title of Kiseki's device in Live's Device View, untick Auto-Scale Plug-In Window, then open the window again. Kiseki scales itself to your screen and stays sharp at any size; Live's auto-scaling stretches a smaller picture instead.

Updating and moving

Run a newer installer over the old one; your presets, licence and projects are left as they are. On a new computer, Windows or Mac, install, then copy `Documents/Denki Digital` across: your licences and presets come with it. To uninstall on Windows, open Windows Settings, then Apps, then Installed apps, and choose Kiseki. On a Mac, drag the plugin files and the standalone's folder, where the table above shows them, to the Bin. Either way, your files in Documents stay where they are.

The full guide, with each host's rescan menu, is at **www.denkidigital.com/support/install**.

Technical

TYPE	Vector synthesizer
BEAMS	Three a voice, each one of 17 shapes or your own drawing; sync, ring and FM between them
SHAPES	Circle, Line, Triangle, Square, Pentagon, Hexagon, Octagon, Star, Star 7, Spiral, three Lissajous figures, Tetrahedron, Cube, Octahedron, Pyramid; your own of up to 64 points, in depth
EACH BEAM	Turn X, Y and Z, Spin (to 10 Hz) about X, Y, Z or a tumble, Perspective, Size, Warp in five modes, Bits, Jitter (Air or Chip noise), Fold, Octave, Semi, Fine, Level; FM Depth (beams 2 and 3)
FILTER	Low, band and high, alone or together; Early and Late characters; Cutoff, Resonance, Drive, Key Follow, Batch
VOICES	1 to 16, Poly, Mono, Legato or Chip Chord; Glide, Width; the converter Clean or 1984
MODULATION	Amp envelope (with the chip's own timing), Warp and Filter envelopes, 3 LFOs, 12-slot matrix, 2 macros
FRAME TABLES	Up to 32 steps at 50 or 60 a second or a note value of the tempo, with a loop and a release step
PERFORMANCE	Arpeggiator and chord generator, on-screen keys
EFFECTS	Chorus, Kodama's drum echo, Shimo's and Kumo's reverbs
THE SCREEN	The sound itself, left across and right up: the root note alone, every note, or as heard; Afterglow to 4 s; One Voice
FACTORY PROGRAMS	12 atmospheres, plus Init
LATENCY	42 samples (Kodama's echo), reported always
OUTPUT	Stereo
PANEL	1360 × 704 (770 with the keys), scalable from 60 to 160%

MIDI	Every channel: notes and velocity, pitch bend, mod wheel (CC1), sustain (CC64), channel and polyphonic aftertouch; MIDI learn on the panel's controls
SAMPLE RATE	Your session's own. The voices run at twice it, then come back down
TAIL	Reported to the host as 60 s, the longest of Kumo's decays
FORMAT	VST3 plugin and standalone application; on a Mac also an Audio Unit
SYSTEM	Windows 10 or 11, 64-bit; or macOS 12 or later, Apple silicon or Intel
VERSION	1.1.0

拾陸 KISEKI

Notices

Kiseki is © 2026 Denki Digital Limited. Its sounds, programs, panel and this manual are the studio's own.

Using Kiseki is governed by Denki Digital's end-user licence agreement, which the installer shows before it installs, and which is at **www.denkidigital.com/licence**. In short: use it on any of your own computers, for any music; what you make with it is yours; keep your licence file to yourself; every update is free.

Its panel is set in Rajdhani and Inter, both under the SIL Open Font License 1.1, and it carries code from the open-source projects listed in its notices: choose Third-party notices… from the key's menu, or open `THIRD-PARTY-NOTICES.txt` in the `Licences` folder beside the standalone.

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軌跡

電 DENKI DIGITAL

Inspired by Tokyo. Built in Aberdeen.

東京に着想を得て、アバディーンで作る。

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