SPECTRAL SAMPLER

Niji

虹 rainbow

Niji is a spectral sampler. Drop a sound in and Niji writes it down as a few hundred sine partials and the noise between them, then plays that description, so time, pitch and timbre come apart.

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Niji, from the first sound to the last setting.

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Any sound, split like light: loading a sound, everything that bends it, moves it and places it, and all 65 programs.

Welcome

Niji is a spectral sampler. Drop a sound in and Niji writes it down as a few hundred sine partials, each with its own pitch and level over time, and the breath and noise between them. Then it plays that description, never the recording.

Niji means rainbow: white light split into its colours. That is what it does to a sound. Because it plays a description, the things a sampler ties together come apart. A sound can be slowed, stopped or played backwards with its pitch unmoved, or played an octave up at the same length, a voice keeping its vowel. The partials themselves can be pulled into perfect harmony, stretched into a bell, shifted into metal, filtered, smeared and thinned. Four sounds at the corners of the Morph field blend through the same partials. And the partials can be painted by hand.

Niji is made for sounds that live for a long time: pads that breathe for minutes, drones, field recordings turned into soundscapes, voices turned into choirs, bells that bloom. Each partial can drift and wander in the stereo field on its own, so a held note never sounds held. Around the voices are the movement of a large synthesizer, the Denki Digital arpeggiator and chord generator, and the spaces of three other Denki Digital instruments: Kodama's echo, and Shimo's and Kumo's reverbs.

Niji ships no sounds. Its 64 programs are treatments for whatever you load into it.

Five minutes with Niji

1. Put Niji on an instrument track. It opens on Niji, the Init program. With no sound loaded, the keys play a plain test spectrum of harmonics, drawn as threads of light across the display.
2. Drag a sound file from File Explorer, or the Finder on a Mac, onto the panel: a WAV, AIFF, FLAC, Ogg or MP3 of up to a minute. A held note, a voice or a field recording is a good first choice. The header counts the analysis up to 100 %, a slim line along the foot of the display showing how far it has got; then a scan line crosses the display and the sound is drawn behind it as its partials, low notes red through to high notes violet.
3. Play. A sound with a clear pitch plays at its own pitch on its root key, shown in the header; any other plays as it was on C3.
4. Click anywhere on the sound in the display: that sets **Scan**, the place each new note starts. Turn **Speed** down, and the sound slows without its pitch falling. Click **Freeze** and it stops still, on the moment it reached.
5. Turn up **Drift** and **Space** in the Voice well, and hold a chord. Each partial moves and wanders on its own.
6. Drop a second sound onto the top right-hand corner of the Morph field, B. Turn **Macro 1**: the point moves from A towards B, and the first sound turns into the second.
7. Click the program name for the menu, and try Kasumi in Pads, Kori in Frozen or Hibiki in Bells.

NOTE NAMES

Niji names keys as Ableton Live does: middle C, MIDI note 60, is C3. The display's pitch scale, the roots of your sounds and the on-screen keys all use these names.

The panel



Niji with three sounds loaded, a choir in A, a bowl in B and a breath in D, while a chord plays: the choir's partials fill the display, and the voices travel the path drawn in the Morph field.

1	**Program**	The program's number (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 a few seconds.
2	**Arrows**	The previous and next sound: the factory programs, then your own presets, then any designer banks, round and round.
3	**Source line**	With one sound loaded: its slot, name, length, how many partials sound at once, and its root. With several: each slot and its name. While a sound is analysed, how far it has got; if it can't be read, why.
4	**Keys glyph**	Shows or hides the on-screen keys.
5	**Key and size**	The licence key, and beside it the window size.
6	**The spectrum**	The sound as Niji wrote it down: time across, pitch up, each partial in the colour of its pitch and as bright as it is loud, the noise a faint haze behind. Its pages lie over it. See The display, below.

7 **Page keys** Play, Bars, Paint, Sources, Space, Mod, Arp	The display's seven pages. Each has its own chapter.
8 **Scan's mark**	Where each new note starts reading. Drag it, or click on the sound.
9 **Loop brackets**	The loop's start and end, shown while Loop is on. Drag either.
10 **Playheads**	Where each voice is reading now.
11 **Filter curve**	The Spectral Filter's and Tilt's shape, drawn down the display's right edge while either acts.
12 **Loop** Off, Forward, Back-and-forth	How a voice goes on at the end of the sound, or of the loop.
13 **Freeze** On or off	Stops every voice where it is, gliding there.
14 **Time knobs**	Scan, Speed, Loop Blend; Scatter, Scan Spread, Steady. See Time.
15 **Filter** Off, Low-pass, High-pass, Band, Teeth	The Spectral Filter's shape.
16 **Comb**	What sounds now: the newest voice's partials, under the filter's shape.
17 **Spectrum knobs**	Harmonics, Stretch, Shift, Beat, Tilt, Odd/Even; Cutoff, Resonance, Width, Blur, Count, Noise. See The spectrum.
18 **Voice mode** Poly, Mono, Legato	How notes are given voices.
19 **Hold** On or off	Notes latch until the next chord.
20 **Voice knobs**	Formant, Fine, Glide, Voices; Unison, Detune, Drift, Space. See Voice and Amp.
21 **Path** Off, Loop, Once	Whether the Morph point follows the path drawn in the field.
22 **Path Time, Wander**	How long the path takes; how far the point wanders by itself.
23 **Sync** Free, 1 to 16 bars	The path's length in bars at your host's tempo, or Free for Path Time.
24 **Morph field**	The four sounds at its corners, A to D, and the point that blends them. See Morph.

25	**Movement tiles**	Env 2, Env 3, LFO 1 to 3, FG 1 and FG 2, each drawn live. Click one to open it on the Mod page.
26	**Macros** 0 to 100 %	Macro 1 and Macro 2, matrix sources. As Niji starts, they move the Morph point.
27	**Echo, Shimo, Kumo** On or off	Switch Kodama's echo and the two reverbs in and out. Their controls are on the Space page.
28	**Amp**	Attack, Decay, Sustain, Release and Level.
29	**Keys**	Over five octaves, 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 %, 1.2 kHz, −12 ct, 1.50 s.
Key rows	Loop, Filter, Voice mode, Path and the Character row on the Space page: click a key to choose it. The chosen key's light is on.
Switches	Freeze, Hold and the effect keys: click to turn on or off.
Menu keys	Sync, and the choosers on the Mod and Space pages: click for a menu of every choice.

Each well's lights take one band of the rainbow: Time amber, Spectrum green, Voice blue, Movement and Amp violet. A knob that the matrix moves shows a thin violet arc outside its own, each way from it, as far as the slots that move it reach together. Every control is a host parameter, the loop's ends, the Morph point and the 32 Bars included, so your host can automate any of them.

The display

The display, The Spectrum, shows the sound and is where it is played with, painted and set up. Its seven page keys sit along its top edge.

PLAY	The sound itself, live. Below.
BARS	Thirty-two columns that set each harmonic's level and tuning. See Bars and Paint.
PAINT	The sound, with the tools to draw on it. See Bars and Paint.

SOURCES	The four slots. See Sounds: loading and analysis.
SPACE	The chorus, echo and reverbs. See The space, MIDI and the host.
MOD	The modulators and the matrix. See Movement.
ARP	The arpeggiator and chord generator. See Arpeggiator and chords.

PLAY

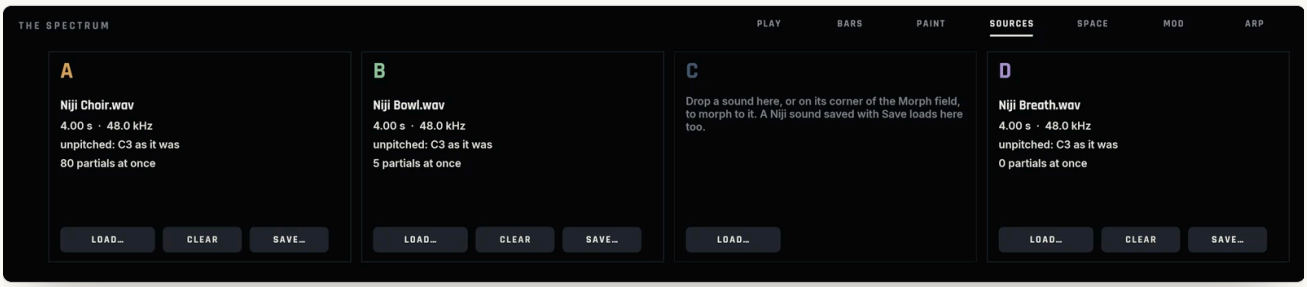
Time runs across, the whole sound from left to right; pitch runs up on a scale of octaves, with a line at every C named after Live (C0 to C8). Each partial is a thread in the colour of its pitch, low red through to high violet, as bright as it is loud; the noise is a faint haze behind them.

Scan's mark Amber	The triangle and line where each new note starts. Drag it, or click anywhere on the sound to put it there.
Loop brackets	The loop's start and end, with the stretch between lit faintly. Shown while Loop is Forward or Back-and-forth; drag either. They sit within the part of the sound the analysis was sure of, away from its very first and last moments.
Playheads	A bright line for each sounding voice, where it is reading now.
Filter curve Green	The Spectral Filter's and Tilt's gain at each pitch, drawn down the right edge: the faint line is no change, left of it cut, right of it boosted.

With no sound loaded, the Play page draws what sounds instead: the test spectrum's harmonics as threads of light flowing from right to left.

Sounds: loading and analysis

Niji holds up to four sounds, in slots A to D. Each is listened to once, written down as partials and noise, and played from that description from then on.



The Sources page with three sounds loaded and C empty. The choir is a chord of three voices, so it comes in unpitched; the breath has no partials at all, only noise.

Loading a sound

Niji reads WAV, AIFF, FLAC, Ogg and MP3 files, and Niji sounds (below). There are three ways in:

DROP IT ON THE PANEL	Anywhere on Niji, and it loads into A.
DROP IT ON A CORNER	On a corner of the Morph field, and it loads into that slot: A top left, B top right, C bottom left, D bottom right.
THE SOURCES PAGE	Drop it on a slot's box, or click its **Load…** key and choose a file. **Clear** empties the slot, and **Save…** keeps its sound as a Niji sound.

> TIP
>
> Samples from Ableton's add-on packs are kept in Ableton's own protected format, which only Live can play, and Niji says so if you drop one. Drag it onto an audio track in Live's Arrangement View, select the clip and choose **Consolidate** (Ctrl+J, Cmd+J on a Mac; it works in the Arrangement only), then drop the new file on Niji from Current Project in Live's browser. In Session View, right-click the clip and choose **Crop Sample** instead. The sounds in Live's Core Library are ordinary files and load as they are.

A sound in a slot that already holds one replaces it. Niji uses the first 60 seconds of a longer file. A stereo file is mixed to mono, and every sound is brought to the same peak, −1 dBFS, before it is analysed, so a program sounds alike on a quiet recording and a loud one. Stereo comes back afterwards, partial by partial, through Space and Unison.

Saving a sound

A slot's sound, with everything you painted on it, can be kept as a file of its own: click the slot's **Save...** key on the Sources page. It is saved as a Niji sound (.njan), in Documents/Denki Digital/Niji/Sounds unless you choose somewhere else. A Niji sound is Niji's own description of the sound, not audio. Load it into any slot of any project as you would a recording: it comes in at once, as it was, with nothing analysed again.

The analysis

The analysis runs in the background: you can go on playing. The source line in the header, and the display, count it up to 100 %, the display with a slim line along its foot; when it finishes, a scan line crosses the display in about half a second and the result appears behind it (unless Windows has its animation effects turned off, when it simply appears). A sound of several seconds is usually ready in under a second.

Niji first listens for the sound's pitch. Then it looks at it every 2.7 milliseconds, finds the peaks of its spectrum, follows each from moment to moment as a partial with its own pitch and level, and keeps what is left over, the breath, bow and air, as noise in 32 bands. A few hundred partials is usual; a dense sound has more. The Sources page shows, for each slot, the file's name, its length and rate, its root, and the most partials that sound at once.

Pitched and unpitched

A sound with one clear pitch, a sung or played note, is **pitched**. Niji finds its root and shows it after Live's names (root A2). Each of its partials is numbered as a harmonic, which is what Harmonics, Stretch, Odd/Even and Bars work with. Play the root key and you hear the sound at its own pitch; play an octave up and it sounds an octave up, at the same length.

Anything else is **unpitched**: a chord, a bell or bowl whose partials are not whole-number multiples of one note, noise, rain, a room. It reads unpitched: C3 as it was, and plays at its own pitch on C3. A sound counts as pitched only if its numbered harmonics fill at least about a third of the numbers up to its highest, so a bowl's few widely spaced partials are never taken for the high harmonics of a low note. A chord is read with a longer look at each moment, long enough to part its notes' partials.

Kept with the project

The project keeps each slot's analysis, compressed, never the audio. A project opens on any computer, with the original files moved or deleted. It also keeps where each file was. With no sound in any slot, Niji plays a test spectrum: plain harmonics, as many as Count allows.

> WHICH SOUND THE DISPLAY SHOWS
>
> The display shows the first slot that holds a sound, A if it has one, and so does the timeline Scan and the loop are set on. The other sounds play at the same share of their own length.

Time

Where in the sound each voice reads, and how fast it moves through it. Pitch never follows: a slowed sound keeps its pitch, and a stopped one keeps sounding.

Scan 0 to 100 %; 0 %	Where each new note starts, across the whole sound. Turned while notes sound, it moves where they read too, gliding there, so with Freeze on it scrubs through the sound. Also set on the display, by its mark or a click.
Speed −200 to +200 %; 100 %	How fast each voice moves through the sound. 100 % is as recorded, 50 % half as fast (twice as long), 0 % stands still. Below 0 the sound plays backwards. It glides when you change it.
Freeze On or off	Holds every voice still where it is, gliding to a stop over about a tenth of a second, and back to Speed when it is let go. A frozen moment keeps every partial and its noise, and doesn't flutter. Turn Scan to move the frozen moment through the sound. Frozen at the very start, many sounds are still silent (a breath before the voice): if a frozen note is quiet, turn Scan.
Loop Off, Forward, Back-and-forth; Forward	Off plays to the end of the sound once, and is silent there, the key still held. Forward goes round the loop. Back-and-forth turns at each end.
Loop Start, Loop End 0 to 100 %; 0 and 100 %	The loop's ends, dragged as the brackets on the display.
Loop Blend 0 to 100 %; 30 %	In a Forward loop, fades the loop's end out as its start comes in, over up to half the loop, the two in step so the level stays even. A loop never clicks or jumps in colour.
Scatter 0 to 2 s; 0	Lets each partial read a little ahead of or behind the others, each by its own share, up to this far either way. A frozen moment becomes a shimmering cloud of its own past and future.
Scan Spread 0 to 100 %; 0 %	Starts each new note somewhere else around Scan, at random, up to this share of the sound either side. A chord of one sound is never one sound repeated.
Steady 0 to 100 %; 0 %	Flattens the sound's own wobble, its vibrato and drift, towards each partial's average pitch. At 100 % a wavering voice becomes a pure tone.

Every voice has its own place in the sound. With Scan Spread or Unison, notes of one chord read different moments; with Freeze, each holds its own.

SLOWING AND FREEZING

For a pad from any sound: Loop Forward, Speed between 20 and 40 %, Loop Blend high. For a held moment: Freeze, then click the display to choose which moment, and add a little Scatter and Blur.

The spectrum

The Spectrum well works on the partials themselves. None of it is a filter in the usual sense: each control changes the partials' pitches or levels directly, so nothing rings and nothing smears unless you ask it to.

Pitches

Harmonics 0 to 100 %; 0 %	Pulls every partial towards an exact whole-number multiple of the note played. 0 % is as recorded; 100 % perfectly harmonic. A breathy flute becomes an organ pipe. Each partial moves from its own average, so it keeps its own small wobble.
Stretch −100 to +100 %; 0 %	Pushes the partials off the whole numbers, more the higher they go. A little above 0 is a piano's stiff string (at 25 % the tenth partial is half a semitone sharp); further gives bells and metal (at 100 % the tenth is half an octave up). Below 0 squeezes them together.
Shift −1 kHz to +1 kHz; 0	Moves every partial by the same number of hertz: a clangorous, ring-modulated colour, as the harmonics stop being multiples of anything.
Beat 0 to 5 Hz; 0	Gives each partial a slow twin this far away, sharing its level, so each one beats. The twin fades in over the first 0.5 Hz; at 0 nothing changes.

A pitched sound's partials know their harmonic numbers from the analysis. An unpitched sound's are numbered by the nearest whole number to their pitch over its root, so Harmonics and Stretch still bend a bell, but in their own way.

Levels

Tilt −12 to +12 dB/oct; 0	Brighter or darker, in decibels per octave about 1 kHz. Its boost eases off as it nears +12 dB, so the deepest bass or the highest treble can't run away; its cut goes as far as the slope takes it.
Odd/Even −100 to +100 %; 0 %	Above 0 the even harmonics fall away, until at 100 % only the odd ones are left: hollow, like a clarinet. Below 0 the odd ones fall away instead, all but the first.
Blur 0 to 100 %; 0 %	Smears each partial's level and each noise band over time, up to 0.8 s: softer attacks, longer tails, a dreamier freeze. A partial that ends fades on at its last pitch.

Count 16 to 512; 256	How many partials sound, loudest first. Low, a whistle of the strongest few; high, the whole sound. A partial at the edge fades in or out rather than switching, and once in it stays until it is well outside, so a few more than Count may sound.
Noise 0 to 100 %; 0 %	The level of the noise Niji kept between the partials, from pure sines to the full breath. It starts at 0 %, the partials alone: turn it up to bring back the breath, bow and air, and for a sound made mostly of noise (wind, rain, a whisper, a drum loop), which is otherwise almost silent. When such a sound is loaded and Noise is low, the header says so (Mostly noise: turn up Noise to hear it) and the knob wears an amber ring. Taiko and Kudaki, in Pulses, are made for beats.

The Spectral Filter

The filter works on the partials' levels, and on the noise's bands alike, so the whole sound is shaped. Because it sets levels rather than filtering audio, it has no ringing or phase of its own.

Filter Off, Low-pass, High-pass, Band, Teeth; Off	Low-pass and High-pass are steep, 24 dB an octave, 3 dB down at Cutoff. Band keeps a band around Cutoff, Width wide. Teeth is a comb: a tooth every Cutoff hertz (at Cutoff, twice Cutoff, three times…), so it keeps partials that fall on them and cuts those between.
Cutoff 20 Hz to 20 kHz; 4 kHz	The filter's frequency, or the spacing of the teeth.
Resonance 0 to 100 %; 0 %	A raised peak at Cutoff, up to 18 dB, about a third of an octave wide: a filter's character without the ringing. Not for Teeth.
Width 0.1 to 8 octaves; 2.0	Band's width: it is 6 dB down half this many octaves either side of Cutoff. For Teeth, how wide each tooth is: at 8, as wide as their spacing.

> TEETH
>
> Set Teeth's Cutoff to twice a pitched sound's root, and only its even harmonics pass; to the root itself, and every harmonic passes while the noise between them is cut.

The comb

The small window at the top right of the Spectrum well shows what sounds now: the newest voice's partials as lines along a scale of pitch from 30 Hz to 16 kHz, each in its pitch's colour and as tall as it is loud (the floor is 48 dB under the loudest), with the filter's and Tilt's shape over them in green.

Voice and Amp

How the description is played: at what pitch, by how many voices, and how it is kept alive.

Pitch

Formant 0 to 100 %; 0 %	At 0 the sound's colour moves with its pitch, as in a sampler: a voice played up sounds smaller. At 100 % the partials take their levels from the sound's own spectral shape at their new pitch, so an ah stays an ah an octave up.
Fine −100 to +100 cents; 0	Fine tuning.
Glide 0 to 5 s; 0	In Mono and Legato, slides each new note from the last.

Voices

Poly, Mono, Legato 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.
Hold On or off	A key let go leaves its note sounding, until the first key of the next chord lets the held ones go. Turning Hold off lets go of every note whose key is up. For drones played with one hand.
Voices 1 to 16; 8	How many notes can sound at once. A new note takes a free voice, then the oldest releasing one, then the oldest of all.
Unison 1 to 4; 1	Copies of each note, each slightly detuned, placed apart in the stereo field and reading a moment apart in the sound, so a single note is already a texture. The copies together are as loud as one.
Detune 0 to 50 cents; 10	How far the unison copies spread, evenly, either side of the note.

Texture

A sound held for a minute should not sound held. These two work on every partial separately.

Drift 0 to 100 %; 0 %	Each partial's pitch and level wander slowly, on two random lines of their own, each at its own pace. At 100 % they reach about 15 cents and 4 dB either way. A frozen moment breathes, and no two moments are the same.
Space 0 to 100 %; 0 %	Gives each partial its own place in the stereo field, and a slow wander about it. At 0 Niji is exactly mono; at 100 % a wide, moving field. The noise grows a separate right side as it rises. The level holds steady across the field.

Amp

Attack 1 ms to 20 s; 20 ms	The rise to full.
Decay 1 ms to 20 s; 1 s	The fall to Sustain.
Sustain 0 to 100 %; 80 %	The level held while the key is down.
Release 1 ms to 60 s; 1.5 s	The fall to silence once the key is let go.
Level −48 to +6 dB; −12 dB	The voices' level, before the space. Each program sets its own.

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.

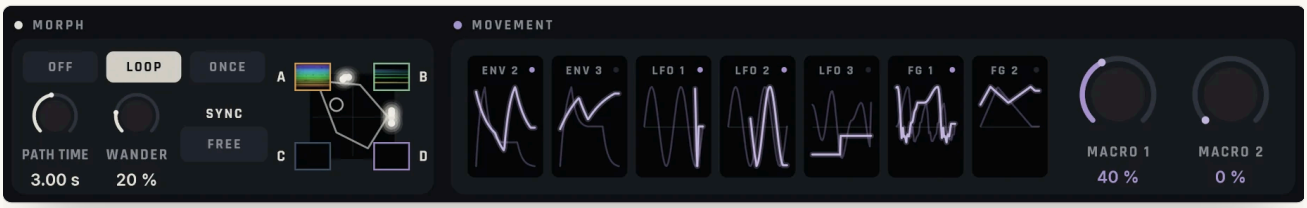
Two settings without knobs

These are host parameters, and part of every program and preset, with no knob on the panel.

Bend Range 0 to 24 semitones; 2	How far the pitch wheel bends.
Phases Free, Original; Free	Free starts each partial of a new note at a random phase: smooth, never phasey. Original starts them as they were recorded, so a plucked or struck attack keeps more of its snap.

Morph

The four slots sit at the corners of the Morph field. The point inside it decides how much of each is heard, and between them their partials meet and blend.



The Morph well, with Path on Loop round the path drawn in the field, and Movement's tiles beside it.

The field

A at the top left, B at the top right, C at the bottom left, D at the bottom right. Each corner shows a tiny picture of its sound's partials, framed in its band of the rainbow. The ring is the point the knobs set; each sounding voice shows as a small light where it hears the point, which differs when a path, Wander or the matrix moves it.

With **Path** off, drag in the field to move the point. That sets **Morph X** and **Morph Y**, host parameters; as Niji starts, the point is at A. The four sounds mix by the point's distance from each corner. A corner with no sound has no say: with only A and B loaded, only across matters; with only A, A is everywhere.

How the sounds blend

Niji matches the sounds' partials whenever a slot changes. Partials match by harmonic number when both sounds are pitched; otherwise by nearest pitch, within a semitone, where they sound at the same share of their sounds' lengths. Between two matched partials, the pitch moves in cents and the level in decibels, so half way is half way to the ear. A partial only one sound has fades with that sound's share; the noise bands blend directly.

Every sound is moved to the key you play from its own root, and each reads at the same share of its own length as the display's sound: a two-second bowl and a six-second choir both reach their ends together.

The path

Path Off, Loop, Once; Off	With Loop or Once, each voice's point follows the path drawn in the field: Loop goes round and round, Once travels it once per note and stays at its end.
Drawing a path	With Path on, drag in the field: the line you draw becomes the new path, from where you started to where you let go. While Path is off it shows faintly.
Path Time 0.25 to 60 s; 8 s	How long one journey along the path takes.

Sync Free, 1, 2, 4, 8 or 16 bars; Free	The journey's length in bars at your host's tempo, in place of Path Time.
Wander 0 to 100 %; 0 %	Moves the point on a slow random line, each step five to fourteen seconds long, up to half the field away, about wherever it would otherwise be.

Each note starts its own journey, so the notes of an arpeggio or a slow chord sit at different places along the path. The path is kept with the project. A Motion program may bring a path of its own, which replaces yours; any other program leaves your path as it is.

> THE MACROS
>
> As Niji starts, matrix slot 2 sends Macro 1 to Morph X at +100 %, and slot 3 sends Macro 2 to Morph Y at −100 %. So Macro 1 moves the point from A towards B, and Macro 2 down towards C and D: the two macros play the field from the first note.

Movement

Two envelopes beside Amp's, three LFOs and two function generators in every voice, and a twelve-slot matrix to send them, and everything you play, where you like.

The tiles and the Mod page

The Movement well shows each modulator as a small live picture: its shape as its settings draw it and, while a note sounds, the newest voice's value tracing over it (a fast LFO's last cycle and a half). The light at a tile's corner is lit while the matrix routes it. Click a tile to open it on the display's Mod page, where the keys on the left choose any modulator or the Matrix, the picture shows the chosen one large with where it is sent, and 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 % (Pitch at +4 %, about a semitone). The line beside it shows where it goes; click the line to open the Matrix and set how much.



Env 2 on the Mod page, sent to Harmonics at +40 %, a note's own trace over its shape.

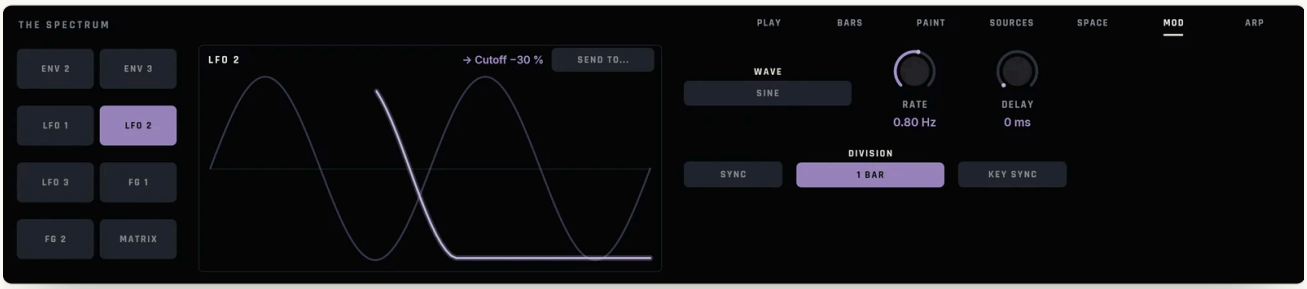
Env 2 and Env 3

Env 1, the Amp envelope, shapes each note's level and is a matrix source too. Env 2 and Env 3 are free for the matrix: neither is heard until a slot routes it.

Attack 1 ms to 30 s	The rise to full.
Decay 1 ms to 60 s	The fall to Sustain.
Sustain 0 to 100 %	The level held while the key is down.
Release 1 ms to 60 s	The fall to nothing once the key is let go.

Attack Curve, Decay Curve, Release 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 Niji starts, Env 2 rises in half a second and falls to 30 % over two; Env 3 swells over two seconds and holds at half way, with a four-second decay and release.



LFO 2 on the Mod page: a sine, sent to Cutoff at −30 %.

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.
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 0.2 Hz; LFO 3 at 0.05 Hz, as a Smooth Random.
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 Niji starts.



FG 1 on the Mod page: three segments, the third looping back to the second while the key is held. Segment 1, an S-curve, is lit for editing.

Function generators

Two function generators, each of up to eight segments: an envelope with a loop in it, a stepped pattern, an LFO of your own shape, or a slow random wander. They are Henge's, shared across the Denki Digital instruments. A segment travels from wherever the generator is to its level, over its time, along one of 22 shapes. At its end the generator moves on to the next segment, or jumps to any segment when the segment's condition holds. After the last segment, with no jump, it holds. The output runs from −100 to +100 %. Click a segment in the picture to edit it; the picture numbers each segment and lights the one being edited.

Mode Per Note, Free Run	Per Note, each voice has its own, started by its note. Free Run, one runs for the whole instrument and every voice hears it.
Follow Tempo On or off	Times are read as at 120 BPM and scale with your host's tempo.
Segments 1 to 8; 2	How many segments it uses. As Niji starts, each generator rises to full in a second and falls back over two.
Level −100 to +100 %	Where the segment goes.
Time 1 ms to 60 s	How long it takes.
Shape 22 shapes	Linear; Fast 1 to 4 (fast at first); Slow 1 to 4 (slow at first); S-Curve and Sharp S; Hold (stays, then steps at the end); Jump (steps at once); Overshoot; Spring; Bounce; Ripple; Arc; Stairs 4 and 8; Jitter; Wander.
Level Mode Level, Change, Random, Random Change	Go to Level; go this far from the last level; go to a random level between 0 and Level; or take a random step of up to this far.
Jump 12 conditions	Never, Always (a loop), Held at End, Held Now, Released at End, Released Now, LFO 1 at End, LFO 2 at End, Velocity at End, Key at End, Wheel at End, Pedal at End. At End waits for the segment to finish; Now jumps the moment the condition holds.
Condition −100 to +100 %	The value the LFO, velocity, key and wheel conditions compare with: an LFO at or above it; velocity, key or wheel above it, or with a negative Condition below its size.
Jump To 1 to 8	The segment it jumps to. It starts from wherever the generator is, so nothing steps.



The matrix: the wheel's vibrato in slot 1, the two macros across the Morph field in slots 2 and 3, and LFO 2, Env 2 and FG 1 on Cutoff, Harmonics and Blur.

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; drag the amount bar sideways, Shift for fine, and double-click it to empty it. Slots on the same destination add up. A modulator's own page can fill a slot for you, with **Send to…**. Each voice works out its own, so velocity, key and Random give every note its own amount.

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.
LFO 1, LFO 2, LFO 3	−1 to +1.
FG 1, FG 2	−1 to +1.
MACRO 1, MACRO 2	0 to 1: the two knobs in the Movement well.
MORPH X, MORPH Y	0 to 1: the voice's point in the field.
RANDOM	−1 to +1: a new value for each note, held for its length.
CONSTANT	Always 1: a fixed offset.

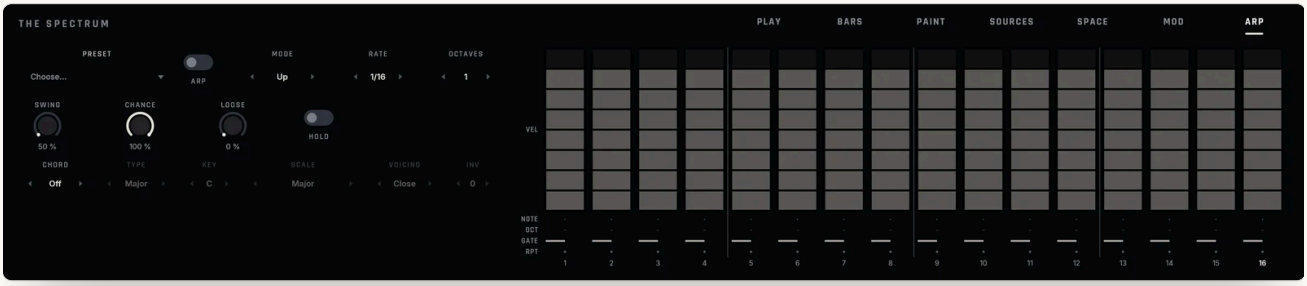
DESTINATIONS

DESTINATION	AT AN AMOUNT OF 100 %, WITH THE SOURCE AT 1
PITCH	24 semitones.
SCAN	Moves where the voice reads, by the whole sound.
SPEED, HARMONICS, STRETCH, SHIFT, BEAT, TILT, ODD/EVEN, CUTOFF, RESONANCE, BLUR, COUNT, NOISE, FORMANT, DRIFT, SPACE, SCATTER, DETUNE	Moves the knob across its whole travel, the way the knob turns: so Cutoff moves in octaves. The knob shows how far with its violet arc.
MORPH X, MORPH Y	Moves the point across the whole field.
AMP	The voice's level: silent at −100, double at +100.
LFO 1 RATE TO LFO 3 RATE, FG 1 RATE, FG 2 RATE	Sixteen times as fast at +100, a sixteenth at −100.

As Niji 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. Slots 2 and 3 give the macros the Morph field.

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 Niji starts: the arpeggiator and the chord generator off, the pattern on the right.

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.

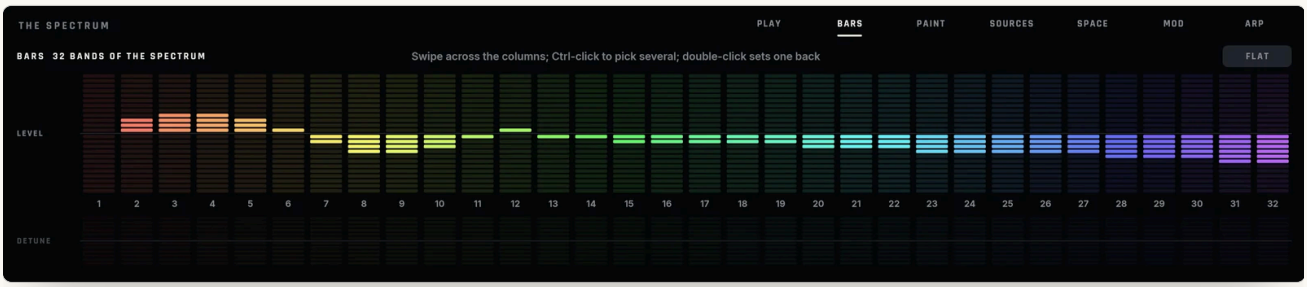
Rpt 1 to 4	Ratchet: the step repeats its note up to four times. Click to change.
Step numbers	Click a number to end the pattern there. The step playing lights.

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.

> PROGRAMS
>
> Six of the Pulses programs bring their own patterns: hold a chord. Any other program switches the arpeggiator and the chord generator off, and leaves the pattern for next time.

Bars and Paint

Two ways to change the sound itself. Bars is the quick way: a drawbar for each harmonic. Paint is the detailed way: the display becomes a canvas.



The Bars page over an unpitched sound: its columns are 32 bands of the spectrum, Level only, with Detune dimmed.

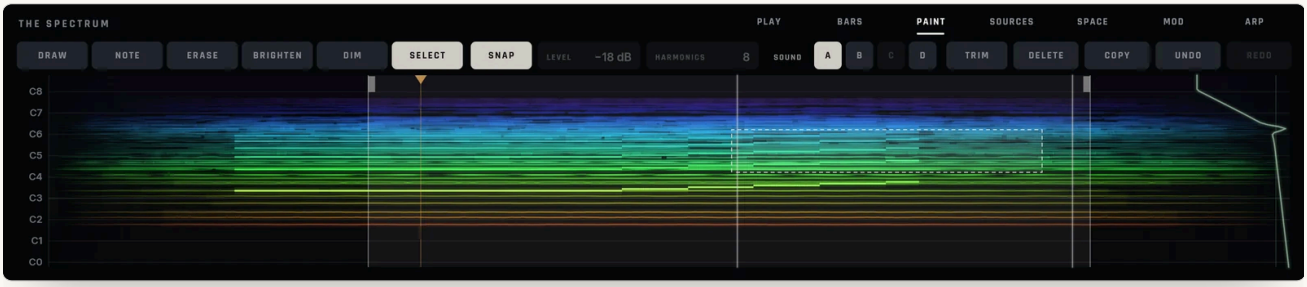
Bars

Thirty-two columns, one for each harmonic, 1 to 32, of a pitched sound. Each is a tall stack of lit dots in the rainbow's colours, in two rows:

Level −24 to +24 dB; 0	Raises or lowers that harmonic.
Detune −50 to +50 cents; 0	Moves it off its whole number: the slow beating and inharmonic shimmer of a single partial.

Swipe across the columns like drawbars: each column you pass takes the pointer's height. Ctrl-click to pick several, and they then move together. A double-click sets a column, or those picked, back to nothing; **Flat** sets them all back. Hover over a column to read its harmonic and its values above the rows.

The changes apply across the whole sound, on top of the analysis, and they morph with the sounds: each sound's partials take their column as they join the blend. Over an unpitched sound the columns are 32 bands of the spectrum, Level only, and the Detune row dims. Each column is a host parameter, so Bars automate, and save and undo, as every other control does.



The Paint page: a note drawn across the choir with its harmonics, and a box chosen with Select, ready to move or copy.

Paint

On the Paint page the display shows the sound in the slot being painted, with the tools above it. Time runs across and pitch up, with a line at every C. An edit changes that slot's analysis: it plays at once, morphs with the other sounds, and is kept with the project. The noise is left as it was, except by Trim.

Draw	Draws a new partial along your stroke, at the Level set. With Snap on, it sits on the nearest note. Hold Shift for a straight line from where you began: a steady note, or a clean glide.
Note	Draws a note: its partial and its harmonics above it, up to Harmonics, each quieter in turn (the second at half the level, the third at a third). Its harmonics show faintly as you draw. Shift draws a straight line, as with Draw.
Erase	A brush that takes away the partials it passes over, leaving their neighbours.
Brighten, Dim	Brushes that raise or lower what they pass over by 3 dB a stroke.
Select	Drag a box. Then drag inside it to move what it holds in time and pitch; with Alt or Ctrl held as you let go, it is copied instead.
Snap On or off; on	Draw and Note land on the nearest note.
Level −48 to 0 dB; −18 dB	A drawn partial's level. Click for a menu, drag the key up or down, or turn the mouse wheel over it.
Harmonics 1 to 16; 8	How many harmonics Note draws. Click for a menu, drag, or turn the wheel.
Sound A, B, C, D	Which slot is painted. Empty slots dim.
Trim	Cuts the slot's sound to the loop, its partials and noise alike; what is left plays as it did. With Loop off it dims. Trimming the first slot with a sound, whose time the voices follow, sets the loop back to the whole of what is left. Undo brings the whole sound back.
Delete, Copy	Take away what the box holds, or copy it to just after itself.
Undo, Redo	Fifty steps each, for each slot. Past a slot's first edit, Undo brings back the sounds a preset with sounds replaced.

The keyboard works too, while the display has focus: **Ctrl+Z** undoes, **Ctrl+Y** or **Ctrl+Shift+Z** redoes, **Ctrl+D** copies the box, and **Delete** takes it away. The history belongs to the slot: loading another sound into it, or opening a project, starts it afresh.

IDEAS

Paint a few bright notes over a frozen pad and they hold in it as if they had been played into the recording. Erase a band of partials across a voice to leave only its breath and its highest harmonics.

The space, MIDI and the host

After the voices, 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, with the echo and Shimo on: the drum turning and its repeats, the reverb's decay drawn from its settings and its tail traced over it.

The Amp well's **Echo**, **Shimo** and **Kumo** keys switch them in and out, and so does each one's key on the Space page. Shimo is on as Niji starts; the others wait. 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.
ECHO	Kodama's magnetic drum echo, with its preamp drive. Above: the switch, Echo, Repeat or Swell, the four heads, Sync and its note value. Below: Drum Speed, Feedback, Feedback Tone, Mix, Drive, Color, Crunch; Noise, Age, Bias, Wow, Flutter, Head Wear, Motor and Output. The picture shows the drum turning with its heads lit, and the repeats it leaves along a timeline. Each head's level and tone are host parameters and program settings, not on the page.
SHIMO	Shimo's reverb for clear, bright space. Above: the switch, 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: the switch, the algorithm (Dark, Rise, Dream, Rain or Light), the width, 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.

Each picture also traces its 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.

> KUMO'S SUSTAIN
>
> Kumo's Sustain freezes what it hears into a pad and holds it. It stays on until you switch it off on the Space page: Mugen, in Spaces, uses it.

Kodama's preamp is oversampled, which takes 42 samples. Niji 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	Niji 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, and a function generator condition. Slot 1's vibrato is on it as Niji starts.
SUSTAIN (CC64)	Holds released notes; a function generator condition.
AFTERTOUCH	Channel and polyphonic pressure, as one matrix source.
ALL NOTES OFF, ALL SOUND OFF	Stop every note and reset the arpeggiator and chords.
TEMPO	The host's tempo and position drive everything synced: the LFOs, the function generators, the path, the arpeggiator, the echo and Shimo's Pre-delay. The standalone runs at 120 BPM.
AUTOMATION	Every control, the loop's ends, the Morph point and the Bars included. Map a controller to a parameter in your host, or learn it on the panel (MIDI learn, below).
PROGRAMS	Your host sees the 65 factory programs as Niji's program list.
OUTPUT	Stereo, or mono on a mono track.
LATENCY	42 samples, Kodama's, reported always.
THE PROJECT	Keeps every setting, the program or preset by name, each slot's analysis (never the audio), painted edits included, and where its file was, the path, the MIDI controllers learned, and the window's size, keys and octave.

MIDI learn

The knobs, keys and menus on Niji'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 Niji 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 Niji	Keeps the controllers learned now as the starting set for every Niji 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 Niji had MIDI learn opens with none. A learned controller still reaches Niji 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\Niji\midi-map.json` on Windows and `~/Library/Application Support/Denki Digital/Niji/midi-map.json` on a Mac.

What draws or edits the sound takes no MIDI learn: the Morph field and its path, the loop's brackets and Scan's mark on the display, and the Bars and Paint pages. Map a controller to the Morph point, the loop's ends or a bar in your host instead. The Arp page's knobs, menus and switches do learn, though its step pattern does not.

HOSTS

The controller reaches Niji 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

Sixty-four programs in eight groups of eight, and Init. Each is a treatment for whatever sound you load, and each has a note of what it suits, shown in the program window for five seconds as it loads. They lean towards what Niji does best: sounds that grow and move within a note.

A program never touches your sounds. Most use the sound in A; the Motion programs use all four corners. Each line below gives the program's note, then what it does.

The Pads, Frozen, Voices and Motion programs keep some of the sound's own noise, its breath, bow and air (Noise from 15 to 40 %), so they stay soft rather than ringing like bells; turn Noise down for the pure partials. Where it suits, the noise slowly breathes (LFO 3 on Noise), and a voice starts a fraction flat and slides into tune (Env 3 on Pitch), as a singer does.

Init

01 Niji

The starting point: drop a sound on Niji to play it. Every control at its default, Shimo on.

Pads

02 Kasumi

Best on a held vowel, a bowed note or any sustained sound. Slowed to 35 %, with Scatter, Blur and two copies.

03 Yuugure

Best on strings, choirs or a warm chord. A slightly resonant low-pass at 1.8 kHz, swept slowly by LFO 2; two copies a few cents apart, and a vibrato that arrives after a second and a half.

04 Hoshizora

Best on bells, glass or a bright pluck. Scatter and Scan Spread, Space at 90 %, a slow beat, Shimo's Glass.

05 Nagisa

Best on breathy or noisy sounds: wind, breath, the sea. A long Loop Blend, LFO 3 tilting the colour.

06 Komorebi

Best on guitar, piano or kalimba notes. Harmonics 30 % and two copies, slowed to 30 %.

07 Shinkai

Deep: best in the bottom two octaves. A low-pass at 900 Hz, heavy Blur, Kumo's Dark in place of Shimo.

08 Wataboshi

Best on anything: only the strongest partials, scattered. Count 48, Scatter 900 ms, Space full.

09 Oboro

Best on a voice or a held chord. Steady and heavy Blur, a low-pass at 3 kHz, Shimo with a little Kumo.

Frozen

10 Kori

Click on the display to choose the moment it holds. Freeze on, at the middle of the sound.

11 Shunkan

A moment held as a cloud around Scan: Scatter 400 ms.

12 Seijaku

Very still: best on a single sung or bowed note. Count 24, Steady 80 %, a three-second attack.

13 Mayu

Hold is on: each chord stays until the next. Scan Spread 80 % and two copies.

14 Kasane

Each key holds a moment of its own: Key moves Scan, and Scan Spread is full.

15 Hitoiki

The mod wheel walks through the sound, moving Scan. Each note opens with a breath (Env 2 on Noise).

16 Nemuri

Slow to come and slow to go: a three-second attack, a nine-second release, Blur 80 %.

17 Tomari

Macro 1 moves the held moment through the sound, in place of the Morph field.

Bells

18 Suzu

Best on short sounds: plucks, hits, single notes. Loop off, a struck envelope, Stretch 25 %.

19 Furin

Metal and glass from any sound. Stretch 60 %, Odd/Even 40 %, a quick beat, Kodama's echo.

20 Garasu

Clean and bright: the strongest partials made harmonic. Harmonics 80 %, Count 32.

21 Hibiki

A long ringing tone in a glass room. Harmonics full, Stretch a little below 0, Shimo's Glass.

22 Kane

Best played low and slow. Stretch 80 %, Shift −20 Hz, a nine-second decay.

23 Kirameki

Bright and quick: best high up. Speed 150 %, Count 40, bright Tilt.

24 Ruri

Hollow: the odd harmonics, a band of them. Odd/Even full, a resonant band at 1.5 kHz.

25 Sazanami

Each partial shimmers against a twin: Beat 2.5 Hz, moved by LFO 2.

Voices

26 Koe

A voice played up and down, its vowel kept; vibrato on the wheel. Formant full; each note opens with a breath and slides up into tune.

27 Utai

One voice, gliding: best on a sung note. Mono, a 150 ms glide, two copies; each note slides up into tune, and a vibrato arrives after 0.8 of a second.

28 Inori

A slow choir from one voice: three copies, slowed to 40 %, a vibrato arriving after a second and a half.

29 Sasayaki

Best on speech or whispering. Formant 80 %, Count 24, Shimo's Breath.

30 Kagura

A choir with Kodama's drum behind it.

31 Shomyo

A low chant: play it in the bottom octaves. Legato with a slow glide, Kumo's Dark.

32 Yobigoe

A call that echoes back: the loop Back-and-forth, Kodama's echo; each note opens with a breath.

33 Komoriuta

Soft and close: slowed, blurred, a low-pass at 2.2 kHz, the chorus on Slow; each note opens with a breath.

Motion

34 Uzu

Round all four corners: load sounds into A to D. A looping path, twelve seconds round.

35 Kaze

Wanders among the loaded sounds as the filter breathes: Wander 70 %, LFO 3 on Cutoff.

36 Utsuroi

Each note travels from A to B to D over twenty seconds, once.

37 Meguri

From A to B and back every four bars, in time.

38 Tabiji

Each note sets out from A towards B and settles: FG 1 on Morph X.

39 Yuragi

Harmonics and Blur sway slowly, on LFO 2 and LFO 3.

40 Shiosai

Swells and falls like the tide: LFO 2 on Amp, Cutoff and Noise, the hiss rising with each swell.

41 Kagero

Shimmering, like air over a road: Scatter 500 ms, Drift 70 %.

Spectral

42 Kakera

The sixteen strongest partials, scattered in time, with Kodama's echo.

43 Hagane

Every sound turned to struck steel: Stretch and Harmonics full, Kumo's Light.

44 Kushi

The filter's teeth comb through the partials, moved slowly by LFO 2.

45 Hibiware

Shift breaks the harmonics apart: +120 Hz, with a fast beat and Kodama's echo.

46 Ura

The sound played backwards: Speed −100 %.

47 Uroko

Bars and Odd/Even carve the harmonics (see the Bars page).

48 Sabi

Worn and gritty, with an old drum echo: Kodama driven, aged and worn.

49 Kiseki

Each note bends from the sound towards metal and back: Env 2 on Stretch and Harmonics.

Pulses

50 Taiko

Best on drum loops and beats: the loop as it is, ready to bend. Noise is full, so a beat sounds like itself; C3 plays it at its own speed and pitch.

51 Hamon

A slow arpeggio with a dotted echo: hold a chord. The arpeggiator's Slow Bloom.

52 Tsuzumi

Hand drum hits from any sound: hold a chord. Tribal Toms, Kumo's Rain.

53 Mizuoto

Drops of glass: hold a chord and play high. Glass Rain.

54 Tokei

A clockwork figure in metal: hold a chord. Bent Clockwork, Kodama in eighths.

55 Kudaki

Best on drum loops: broken into grit and metal, in time. Noise full, Scatter, a resonant band filter and Kodama's echo in eighths, in time with the host.

56 Kizami

A held moment cut into sixteenths, in time: Freeze, and a synced square on Amp.

57 Tenteki

Sparse drops in a Japanese scale: hold a chord. Hirajoshi Drops.

Spaces

58 Yami

Dark: Kumo's octave below, deep and long.

59 Kukan

A very large hall: Shimo at 12 seconds.

60 Shinrin

Echoes scattered through trees: Kumo's Rain into Shimo.

61 Dokutsu

Kodama's swell in a cave.

62 Kaitei

Deep and moving: Kumo's Dream.

63 Mugen

Kumo's Sustain is on: what you play joins a held pad (switch it off on the Space page).

64 Yuen

Far away and shining: Shimo into Kumo's shimmer.

65 Hakumei

Echo, then both reverbs: all of Niji's space.

Ways to start

A HELD NOTE OR A VOICE	Kasumi or Oboro for a pad; Koe or Inori to keep it a voice; Seijaku to stop it still.
A PLUCK, A HIT, A SHORT NOTE	Suzu, Garasu or Kane; Komorebi to turn it into a pad.
NOISE, BREATH, A FIELD RECORDING	Nagisa, Wataboshi or Kagero; Shinrin or Kukan for the space round it.
SEVERAL SOUNDS	Load them into A to D, then Uzu, Kaze or Utsuroi, or turn the macros.
RHYTHM	The Pulses: hold a chord, with your host playing.
BUILDING YOUR OWN	Init, a sound, then Speed, Freeze and Scan; Drift and Space to bring it alive; Harmonics and Stretch to change what it is.

Programs and your presets

Niji 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: Init, then a list for each group, Pads, Frozen, Bells, Voices, Motion, Spectral, Pulses and Spaces. Choosing one sets every control, and its note of what it suits shows in the program window for five seconds. It never touches the sounds you have loaded. 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.
Import Bank...	Adds a sound pack, as a `.zip`, as a designer bank: its presets appear under Designer, named after the pack, and any Niji sounds in it go to `Sounds`, in a folder of the same name. You can also drop the zip, or the pack's unzipped folder, onto the panel. Importing a pack again replaces the bank with the new version. Anything in the pack that isn't Niji's, such as a read-me or a demo, is left out.
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, and the path you drew in the Morph field while Path plays it. On its own it holds no sounds, so a preset, like a factory program, is a treatment you can try on any sound. While one of your own is loaded, the program window shows USR in place of a number.

A preset can keep its sounds too. Tick **Keep the sounds with the preset** in Save Preset As, and each loaded slot's sound goes into the preset, painted edits and all, so a finished soundscape travels as one file, to another project or another computer. Loading it puts its sounds back in their slots and empties the others; the program window says with its sounds. The sounds it replaced aren't lost: **Ctrl+Z**, or **Bring Back Your Sounds** in the program menu, brings them back, painted edits and all, and **Ctrl+Y** puts the preset's own back again. Stepping through several presets with sounds, Ctrl+Z still brings back the ones you had before the first. A preset without sounds leaves the sounds you have loaded as they are. Save keeps the sounds of a preset that has them. A preset with sounds is larger: a few hundred kilobytes for each minute-long sound.

Where they live

Your presets are in `Documents/Denki Digital/Niji/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/Niji/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** `Niji-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.** Niji is under Denki Digital, listed as Niji Sampler. If it isn't there, ask your host to rescan its plugins.

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

Installing on a Mac

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

1. **Close your music software.**
2. **Open** `Niji-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.** Niji is under Denki Digital, listed as Niji Sampler: 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/Niji.vst3`
AUDIO UNIT	`/Library/Audio/Plug-Ins/Components/Niji.component`
STANDALONE	`/Applications/Denki Digital/Niji/Niji.app`
THIS MANUAL	`Niji Manual.pdf` beside the standalone, whichever parts you install, and on www.denkidigital.com, from Niji's page
YOUR PRESETS	`Documents/Denki Digital/Niji`
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, Niji 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 752 points instead of 818, so a window that fills the screen opens larger. The first time Niji 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 Niji's device in Live's Device View, untick Auto-Scale Plug-In Window, then open the window again. Niji 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 Niji. 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	Spectral resynthesis sampler
SOURCES	Four, A to D: WAV, AIFF, FLAC, Ogg or MP3, up to 60 s each, read as partials and 32 bands of noise; the project keeps the analyses, not the files
PARTIALS	16 to 512 at once, loudest first
VOICES	1 to 16, Poly, Mono or Legato; Unison up to 4
TIME	Scan, Speed (−200 to +200 %), Freeze, loops with Loop Blend, Scatter (to 2 s), Scan Spread, Steady
SPECTRUM	Harmonics, Stretch, Shift (±1 kHz), Beat (to 5 Hz), Tilt, Odd/Even, Spectral Filter with Resonance, Blur, Count, Noise
MORPH	Four corners; a drawn path, looping or once, free or 1 to 16 bars; Wander
MODULATION	Amp envelope, Env 2 and 3, 3 LFOs, 2 function generators, 12-slot matrix, 2 macros
EDITING	Bars (32 columns, level and detune), Paint with 50 steps of undo
PERFORMANCE	Arpeggiator and chord generator, Hold, on-screen keys
EFFECTS	Chorus, Kodama's drum echo, Shimo's and Kumo's reverbs
FACTORY PROGRAMS	64, in eight groups, plus Init: treatments for your own sounds. Niji ships no sounds
LATENCY	42 samples (Kodama's echo), reported always
OUTPUT	Stereo
PANEL	1360 × 752 (818 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. Each sound is analysed at its own rate, never resampled
TAIL	Reported to the host as 60 s, the longest Release

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 NIJI

Notices

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

Using Niji 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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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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