SIX-VOICE HYBRID POLYSYNTH

Tsukumo 99

九十九　ninety-nine

Tsukumo 99 is a six-voice hybrid polysynth: digital oscillators, a warm four-pole filter, and a panel of black and vermilion lacquer.



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Tsukumo 99, from the first sound to the last setting.

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Ninety-nine years, and almost awake.

The panel and its numbers, the voice, the modes, the deck and the twelve factory programs; then presets and installing.

Welcome

Tsukumo 99 is a six-voice hybrid polysynth: two digital oscillators per voice, a warm four-pole filter that sings as it closes, and a panel of black lacquer with gold legends and vermilion pointers.

Each voice has two oscillators whose triangle, saw and pulse can all sound at once, a little white noise, a 24 dB low-pass filter with its own envelope, a level envelope, and two LFOs fast enough to turn from vibrato into a metallic, frequency-modulated tone. Velocity can reach the level, the filter, the attack times, the pulse width and the LFOs' speed.

A sound is a program, and Tsukumo 99 holds two at once, Upper and Lower. In Single the Upper program has all six voices. In Double each key plays both, three voices each; in Split the keyboard is divided between them. Every sound parameter carries a number on the panel, and you can type that number on the keypad to reach it, as on an instrument of the 1980s, or simply turn the knob.

Under the voice sections, the deck adds what such an instrument never had: an arpeggiator with a chord generator, a modulation matrix, and chorus, tape delay and reverb.

Five minutes with Tsukumo 99

1. Put Tsukumo 99 on an instrument track and play. It opens on 01 Welcome to Denki Digital. Hold one key at a time and walk the roots: each key plays its own chord as an arpeggio, in time with your host.
2. Click the arrow under the program window until it reads 06 Tsukumogami, and play a chord of three notes. It is in Double: every key plays two programs, the Upper a fifth above the Lower. Press into the keys and aftertouch opens it; move the mod wheel for vibrato.
3. Turn **Cutoff** (31) and **Reso** (32) in the VCF section. The readout on the nameboard shows the number, the value and what it means: VCF Cutoff · 36 (975 Hz) · Upper.
4. Now type **3** then **4** on the keypad. Parameter 34, the filter's envelope amount, lights up. Press the arrow keys beside the digits to step its value.
5. Open the program menu and choose Keys, then 10 Kintsugi. Its bell rings from the filter itself: **Reso** (32) close to self-oscillation and **Track** (33) at full, so the ring follows the keys. Turn Reso down and the ring fades to a pluck; turn **Cutoff** (31) and the bell's colour changes.
6. Click **DOUBLE** in the MODE section, then **LOWER** under EDIT. The panel's accents turn jade: you are now editing the second program, which plays under the first.

> TIP
>
> Double-click any knob to put it back to its starting value. Hold Shift while you drag for fine steps.

The panel



Tsukumo 99 on Tsukumogami, in Double, editing the Upper program, VCF Cutoff selected.

A	**Readout**	The selected parameter's number and value in red digits. Under them, its name, its value in units where it has them, and which program it belongs to.
B	**Scope**	The output as a trace, held still on the newest note, whose name and frequency are shown beneath.
C	**Keypad** 0 to 9, and arrows	Type two digits to select a parameter by its number. The arrows step its value down and up.
D	**Program**	The program's number and name. Click it for the program menu; the arrows under it step to the previous and next sound.
E	**DCO 1** 11 to 15, 17	The first oscillator's octave, its three waves and pulse width, and the noise.

F	**DCO 2** 21 to 27	The second oscillator, with its interval above the first and its detune.
G	**VCF** 31 to 35	The four-pole low-pass filter: cutoff, resonance, keyboard tracking, envelope amount and invert.
H	**VCF envelope** 41 to 44	The filter's attack, decay, sustain and release.
I	**VCA envelope** 51 to 55	The level's attack, decay, sustain and release, and the program's volume.
J	**LFO 1** 61 to 69	The first LFO: wave, rate, delay, depth, where it goes, and velocity to rate.
K	**LFO 2** 71 to 79	The second LFO, the same again.
L	**Velocity & wheel** 56 to 59, 81	What velocity reaches, and how much vibrato the mod wheel adds.
M	**Performance** 88 to 99	Settings shared by both programs: levels, the split, transposition, bend range, stereo and the original's habits.
N	**Mode**	Single, Double or Split; which program you are editing; a lamp for each voice; a reminder of the keypad.
O	**Arpeggiator**	The arpeggiator, the chord generator and the sixteen-step pattern.
P	**Modulation**	The Mod LFO and four routing slots.
Q	**Effects**	Tape delay, chorus and reverb.
R	**Keyboard**	Five octaves to play with the mouse. The arrows at each end move it an octave.
S	**Keyboard glyph**	Shows or hides the keyboard.
T	**Size**	The window size. Tsukumo 99 is free, so there is no licence key.

Numbers and the keypad

Every sound parameter has a number, printed above its control. The first digit names the section: 1x is DCO 1, 2x DCO 2, 3x the filter, 4x the filter's envelope, 5x the level and velocity, 6x LFO 1, 7x LFO 2, 8x and 9x the performance settings.

Click any control, or type its two digits on the keypad. The number above the control lights, and the readout shows it. After the first digit the readout waits, showing P3_, for the second. A number with no parameter shows Err and No parameter with the number.

The keypad's arrows step the selected parameter by one, down or up. Typing **9 1** selects the mode, which has no knob of its own: the arrows then step it through Single, Double and Split.

The readout

The left-hand digits are the parameter's number, the right-hand ones its value, always the plain number from 0 to 63 (or the switch or choice). Underneath, a line spells it out: the parameter's name, its value with the unit it stands for, and Upper or Lower for a sound parameter. For example VCA Attack · 40 (389 ms) · Upper.

The controls

Knobs 0 to 63	Drag up or to the right to turn up. Hold Shift for fine steps. The scroll wheel steps one at a time. Double-click to return to the starting value. The value is printed under the knob.
Switches On or off	Click to switch. Lit is on.
Lamps A choice	For the octaves and the LFO waves, click the name you want.

Every control is a parameter your host can automate. Upper and Lower each have their own set.

> COLOUR
>
> The colour tells you which program you are editing: vermilion for Upper, jade for Lower.

The voice

Each of the six voices has two oscillators, white noise, a filter, two envelopes and two LFOs. This section takes them in the panel's order, number by number.

The oscillators

Two oscillators per voice. Each has a triangle, a saw and a pulse, which you switch on in any combination: they add together, so a saw with a pulse under it is one sound, not two.

The oscillators are digital, as the originals of the 1980s were, so they never drift out of tune with each other. Character comes from mixing waves, from detuning the second oscillator against the first, and from the filter.

DCO 1

11 **Oct** 16', 8', 4', 2'	The octave. 8' is the note you play; 16' is an octave below, 4' and 2' one and two above. Starts at 8'.
12 **Tri** On or off	The triangle: soft and round, close to a flute.
13 **Saw** On or off	The saw: bright, full of harmonics, the start of strings and brass. On to begin with.
14 **Pulse** On or off	The pulse: hollow at its widest, nasal as it narrows.
15 **PW** 0 to 63	The pulse's width. At 0 it is a square; turning up narrows it to a thin pulse. Heard only with Pulse on.
17 **Noise** 0 to 63	White noise, mixed in with both oscillators before the filter. For breath, wind and percussion.

DCO 2

21 **Oct** 16', 8', 4', 2'	The second oscillator's octave.
22 to 24 **Tri, Saw, Pulse** On or off	Its waves, as on DCO 1. Saw is on to begin with.

25	**PW** 0 to 63	Its pulse width.
26	**Semi** 0 to +12 semitones	How far above DCO 1 it sounds: 7 for a fifth, 12 for an octave. One key then plays an interval.
27	**Detune** 0 to +50 cents	A small rise above DCO 1, for the slow beating of two oscillators not quite together. Starts at 6, about 5 cents.

> LATCH
>
> Some oscillator settings take effect the moment you move them, others only on the next note, when Latch (98) is on. See Performance.

The filter

A four-pole low-pass filter, 24 dB to the octave, on every voice. Its resonance runs through a loop that saturates as it rises, so the filter thins and sings as you turn it up, and at the top it whistles on its own.

31	**Cutoff** 20 Hz to 18 kHz	The filter's brightness: below the cutoff the sound passes, above it fades away steeply. Starts at 40, about 1.5 kHz.
32	**Reso** 0 to 63	Resonance: a peak at the cutoff. High, the low end thins and the peak rings; at the top of its travel the filter oscillates by itself, a pure tone that follows the cutoff.
33	**Track** 0 to 63	Keyboard tracking: how far the cutoff follows the keys, around middle C. At 63 it moves an octave for every octave you play, so high notes are as bright as low ones. Starts at 32, about half.
34	**Env** 0 to 63	How far the filter's envelope opens the filter above the cutoff: up to eight octaves.
35	**Invert** On or off	Turns the envelope upside down: it closes the filter from the cutoff instead of opening it.

The envelopes

Two envelopes, one for the filter and one for the level, shaped in the same way. The times follow an analogue curve: the attack rises quickly at first, the decay and release fall exponentially, and the time shown is how long they take to fall about 35 dB.

41, 51	**Attack** 1 ms to 12 s	How long the envelope takes to rise when a key goes down.

42, 52	**Decay** 1 ms to 12 s	How long it takes to fall to the sustain level.
43, 53	**Sustain** 0 to 63	The level it holds while the key stays down.
44, 54	**Release** 1 ms to 12 s	How long it takes to fade once you let go.
55	**Volume** 0 to 63	The program's level. Starts at 52, leaving room for loud programs.

> TIP
>
> For a pluck, set both sustains to 0 and the decays short. For a pad, raise both attacks and releases past 40. For brass, give the filter a slightly slower attack than the level.

The LFOs

Two LFOs on every voice. Each starts from the same point of its wave with every note, can fade in after a delay, and can reach either oscillator, the filter and the level, in any combination. Turned past about 20 Hz they stop wobbling and start colouring: the oscillator they reach takes on a bell-like or metallic tone.

61, 71	**Wave** Tri, Saw, Square	The shape. The saw falls; the square jumps between two values.
62, 72	**Rate** 0.05 Hz to 250 Hz	The speed, from one cycle in twenty seconds to audio rate. LFO 1 starts at about 5 Hz, LFO 2 at about 0.6 Hz.
63, 73	**Delay** None to 5 s	How long the LFO takes to fade in after each note. For vibrato that arrives once a note has settled.
64, 74	**Depth** 0 to 63	How far it moves what it reaches: up to an octave either way in pitch, four octaves for the filter, the whole level for the VCA. Gentle in the first half of its travel.
65, 75	**To DCO1** On or off	Sends the LFO to DCO 1's pitch.
66, 76	**To DCO2** On or off	Sends it to DCO 2's pitch.
67, 77	**To VCF** On or off	Sends it to the filter's cutoff.
68, 78	**To VCA** On or off	Sends it to the level: tremolo.

69, 79	**Vel to Rate** 0 to 63	Harder notes make the LFO faster, up to eight times at 63.

To begin with, LFO 1 goes to both oscillators with no depth, ready to be brought in by the wheel as vibrato, and LFO 2 goes to the filter.

Velocity and the wheel

56	**VCA** 0 to 63	How much velocity sets the level. At 0 every note is equally loud; at 63 a soft note is very soft.
57	**VCF** 0 to 63	How much velocity scales the filter envelope's amount, so harder notes are brighter.
58	**Attack** 0 to 63	Harder notes shorten both envelopes' attacks, by up to 95 % at 63.
59	**PW** 0 to 63	Harder notes narrow both oscillators' pulses.
81	**Wheel Amt** 0 to 63	How much the mod wheel adds to LFO 1's depth. Starts at 20: a gentle vibrato at the top of the wheel.

The mod wheel is also a source in the modulation matrix, as are velocity and aftertouch; see Modulation and effects.

> FM
>
> For a bell, switch DCO 1 to Tri alone and DCO 2's waves off, and send LFO 1 to DCO 1 only. Set its Wave to Tri, its Rate above 55 and its Depth to about 20, and turn LFO Steps (99) off. Init is a good place to start.

Single, Double and Split

Tsukumo 99 holds two programs, Upper and Lower, and has six voices to share between them. The MODE switches choose how.

Single	The Upper program alone, on all six voices: six notes at once.
Double	Each key plays both programs, three voices each: three notes at once, every one of them a layer of two sounds.
Split	Keys below the split point play the Lower program, keys from it upwards the Upper, three voices each side.

EDIT chooses which program the panel shows: Upper or Lower. In Single, the panel goes back to Upper, since Lower is not heard. Changing the mode lets go of any notes that are sounding. The six **VOICES** lamps light as voices play: vermilion for Upper, and in Double and Split the last three jade, for Lower.

Voices are handed out in turn, the one silent longest first, so the notes move round the six and, with Stereo on, from side to side. When all are busy, a new note takes the oldest note already let go, or failing that the oldest of all.



Night Ferry, editing the Lower program: the accents turn jade. Split Point (92) is selected on the readout.

Performance

These settings belong to both programs at once, and are saved with them.

88	**Tolerance** 0 to 63	Gives each note a slightly different filter cutoff, up to about a fifth of an octave, and envelope timing, up to about 12 %, as if each voice were a separate circuit board. Starts at 10.
89	**Master** 0 to 63	The output level. Starts at 50.
92	**Split Point** MIDI note 0 to 127	In Split, the lowest key of the Upper program. Starts at 60, middle C.
93	**Upper Trans** −12 to +12 semitones	Transposes the Upper program in Double and Split, shown as 0 to 24 with 12 for none. In Double, 24 puts Upper an octave above Lower.
94	**Upper Vol** 0 to 63	The Upper program's level in Double and Split.
95	**Lower Vol** 0 to 63	The Lower program's level in Double and Split.
96	**Stereo** On or off	On, the voices sit alternately left and right, so a chord spreads across the stereo field. Off, everything is in the centre. On to begin with.
97	**Bend Range** 0 to 12 semitones	How far the pitch wheel bends, up and down. Starts at 2.
98	**Latch** On or off	On, most settings change only on the next note, as on the original; off, every change is heard at once. See below.
99	**LFO Steps** On or off	On, the LFOs move in 64 steps, updated about 1,600 times a second, as the original's processor computed them: slow sweeps step audibly and fast ones gain grit. Off, they are smooth. On to begin with.

Latch

The instrument this one remembers read most of its settings once, when a note began. With **Latch** on, Tsukumo 99 does the same: turn Cutoff while a chord holds, and only the next notes hear it. Some settings always act at once, as they did then: the wave switches, Noise, Detune, Reso, Invert, the LFOs' routing switches and Wheel Amt. Latch is off to begin with, so your host's automation is always heard.

Arpeggiator and chords

The arpeggiator takes the keys you hold and plays them one by one, in time with your host, through a sixteen-step pattern. Before it, a chord generator can turn every key into a chord.



The arpeggiator playing Welcome to Denki Digital: twelve steps over the chords of D Dorian in Scale mode, the playing step lit.

The arpeggiator

Preset
59 presets

Loads a pattern and its chord settings over the sound you are playing, from five groups: Classical, Electronic, Progressive, IDM and Ambient. Everything in the arpeggiator and chord rows changes except Key.

Arp
On or off

Switches the arpeggiator on.

Mode Up, Down, Up-Down, Played, Random, Chord, Converge, Thumb, Walk	The order the held notes play in. Played keeps the order you pressed them. Chord plays all of them on every step. Converge works from the outside in; Thumb returns to the lowest note between each of the others; Walk steps up or down the list at random, never jumping.
Rate 1/4 to 1/32	The length of a step: 1/4, 1/8., 1/8, 1/8T, 1/16, 1/16T or 1/32.
Octaves 1 to 4	How many octaves the notes climb before starting again.
Swing 50 % to 75 %	Pushes every second step late: 50 % is straight, 75 % a hard shuffle.
Chance 0 to 100 %	How often each step plays. Below 100 % some rest, at random. The pattern's first step always plays, to keep the bar.
Loose 0 to 100 %	Lets each hit fall a little late (up to 30 ms) and a little softer, at random, like a hand.
Hold On or off	Keeps the chord playing after you let go, until you play a new one.

The pattern

Under the settings, sixteen steps. The step playing lights.

VEL Rest, or 1 to 127	Each step's velocity, a ladder of lights. Drag across the steps to draw. Click at the very bottom, or right-click, to rest a step; double-click to set it to 100.
NOTE Auto, or 1 to 8	A dot plays the mode's next note. A number plays that note of the held chord, counting up from the lowest; past the last, they repeat an octave up. Click to count up, right-click or Shift-click to count down.
OCT −2 to +2	Moves the step's note by octaves. Click to step through 0, +1, +2, −2, −1; right-click to go back.
GATE Short, Half, Long, Tie	How long each note lasts. Tie runs it into the next step.
RPT 1 to 4	Ratchets: the step's note repeated two, three or four times within it.
Step numbers 1 to 16	Click a number to end the pattern on that step.

While your host plays, the steps sit on its grid. Stopped, the arpeggiator runs at the host's tempo from the first key you play; the standalone application runs at 120 BPM.

Chords

Chord Off, Chord, Scale	Chord plays the same chord on every key. Scale plays the chord that belongs to each key in a key and scale: in C major, D plays D minor and G plays G major, so holding one root after another plays a progression.
Type 20 chords	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 many notes each chord stacks.
Key C to B	The key for Scale mode.
Scale 18 scales	Major, Minor, Harmonic Minor, Melodic Minor, the church modes, both pentatonics, Blues, Whole Tone, Hirajoshi, In Sen, Phrygian Dom, Lydian Dom, Hungarian. On five- and six-note scales the chords stack in fourths and fifths.
Voicing Close, Open, Wide	Open lifts every second note an octave; Wide adds the root an octave below.
Inv 0 to 3	Inversion: lifts the lowest notes an octave.

With the arpeggiator off, the chords play as chords. A program that uses the arpeggiator or the chords brings its own settings; one that doesn't switches both off, and leaves your pattern where it was for when you switch them back on.

> TIP
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> Try the Classical presets: set Key and Scale, then hold one root at a time. Baroque Prelude and Alberti Bass name each step's chord tone in the NOTE row.

Modulation, effects and MIDI

Modulation

One more LFO, the Mod LFO, and four slots that route a source to a destination. They act on the whole instrument, Upper and Lower alike.

LFO Wave Sine, Triangle, Saw Up, Saw Down, Square, S&H, Drift	The Mod LFO's shape. S&H jumps to a random value each cycle; Drift glides between random values.
Rate 0.05 Hz to 30 Hz	Its speed, while Sync is Free.
Sync Free, 2/1 to 1/32	Locks the Mod LFO to the host's tempo, from two bars to a thirty-second note, with dotted and triplet values. While the host plays it follows the host's position.
Key On or off	Restarts the Mod LFO when you play a key from silence.
Source Mod LFO, Mod Wheel, Aftertouch, Velocity, Key, Random	What moves the destination. Key is the note's distance from middle C; Random is a value chosen afresh for each note.
Destination	Cutoff (up to four octaves either way), Resonance, Pulse Width, Pitch and DCO2 Pitch (up to an octave either way), Noise, Level, Chorus Depth, Delay Mix or Reverb Mix.
Amount −100 to +100	Drag along the bar, from its centre. It snaps to 0 near the centre; hold Shift to set small amounts there. Double-click to return to 0.

The small windows step with the chevrons at their sides, or list every choice when you click their middle.

Effects

Chorus, tape delay and reverb, in that order, after the voices. Each adds to the dry sound rather than replacing it, and at zero does nothing at all.

Delay 0 to 100 %	The level of the echoes.
Time 1/16 to 1/2	The echo time, in step with the host's tempo: 1/16, 1/16., 1/8T, 1/8, 1/8., 1/4T, 1/4, 1/4. or 1/2.

Fdbk 0 to 100 %	How many echoes. The repeats saturate like tape rather than running away.
Tone 0 to 100	The echoes' brightness, from dark to bright.
Wow 0 to 100	Bends the repeats in pitch, as a worn tape transport does.
Ping On or off	Ping-pong: the echoes cross from side to side.
Chorus Off, Slow, Fast, Deep	A stereo chorus. Slow is a gentle shimmer, Fast a quicker, tighter one, Deep a wide, slow sway.
Reverb 0 to 100 %	The level of the room.
Size 0.4 s to 10 s	How long the room rings.
Tone 0 to 100	The room's brightness.

MIDI and the host

CHANNELS	Tsukumo 99 plays notes on every MIDI channel.
VELOCITY	Reaches what the Velocity section (56 to 59) and Vel to Rate (69, 79) allow, and is a source in the modulation matrix.
PITCH BEND	Bends both programs by Bend Range (97), up to 12 semitones.
MOD WHEEL (CC 1)	Adds to LFO 1's depth by each program's Wheel Amt (81), and is a source in the modulation matrix. On several showcase programs it opens the filter.
AFTERTOUCH	Channel aftertouch is a source in the modulation matrix. Scream Lead opens its filter with it.
SUSTAIN PEDAL (CC 64)	Holds the notes you let go until the pedal comes up.
ALL NOTES OFF, ALL SOUND OFF	Release or silence every voice, and restart the arpeggiator and chord generator.
TEMPO	The arpeggiator, the Mod LFO's sync and the delay time follow the host's tempo. The standalone application runs at 120 BPM.

AUTOMATION	Every control is a host parameter. Upper's are named Up and Lower's Lo, the performance settings first. Their values read as on the readout: the number, then the unit. Map a controller to a parameter in your host, or learn it on the panel (MIDI learn, below).
PROGRAMS	The 13 factory programs appear in your host's program list.
BYPASS	Your host's bypass silences everything at once, and Tsukumo 99 starts afresh when you bring it back.
OUTPUT	Stereo, or mono on a mono track.
THE PROJECT	Keeps every setting, the program or preset by name, the MIDI controllers learned, and the window's size and keyboard.

MIDI learn

The knobs, keys and menus on Tsukumo 99'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 Tsukumo 99 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 Tsukumo 99	Keeps the controllers learned now as the starting set for every Tsukumo 99 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 Tsukumo 99 had MIDI learn opens with none. A learned controller still reaches Tsukumo 99 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\Tsukumo 99\midi-map.json` on Windows and `~/Library/Application Support/Denki Digital/Tsukumo 99/midi-map.json` on a Mac.

A control in the voice sections learns the program it shows: learn Cutoff while you edit Upper and the controller moves Upper's Cutoff, whichever program you edit after. To play Lower's too, learn it with a controller of its own. Choosing Upper or Lower while one of those controls waits stops the wait. The performance settings and Mode belong to both programs, and learn once.

The deck's knobs, menus and switches learn too: the arpeggiator and chord generator, the modulation matrix (each slot's source, destination and amount) and the effects. Its step pattern does not. Nor do Edit, the keypad and the program window, which are not settings of the sound.

> HOSTS
>
> The controller reaches Tsukumo 99 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, each showing a different side of the instrument: the modes, the deck, the filter and the way it answers your hands. Where a program plays a pattern or a chord, its line says what to hold. Those that keep time follow your host's tempo; in the standalone, set the tempo box.

Sequence

01 Welcome to Denki Digital

Hold one key at a time: that root's seventh chord in D Dorian, voiced wide, its notes in turn as triplet eighths, twelve steps to the cycle with an accent every third, through the deep chorus and a ping-pong echo. Triangle, saw and pulse over a pulse an octave down, dark and warm.

02 Yamanote Line

Hold roots: the chords of A Hirajoshi, the Japanese pentatonic, stacked in its own fourths and fifths and opened out, gated in sixteenths with the host, the filter lifting with each pulse. Aftertouch opens it; the wheel sends it into the echo.

03 Abacus

Hold a chord: sixteen steps of resonant plucks over two octaves, some skipped at random (Chance 80 %), some a little late (Loose), three of them ratcheted. A random step on the cutoff every sixteenth, and LFO 2 stepping the filter in six-bit stairs. Play harder for more resonance; the wheel sends it into the echo.

Split

04 Night Ferry

Split at A3. Hold one note below it and a chord above: the arpeggio (Thumb) returns to the low note between each of the others, so the Lower program plays a driving bass of saw and pulse while the Upper, an octave up, rings bells of triangle and pulse a fifth wide over it. Swung sixteenths, and a two-bar sweep on the filter.

Chord

05 Harbour Lights

One key, a minor ninth: a short chord of pulse and saw into a dark, wavering dotted-eighth echo that bounces from side to side. Play harder and more of it goes into the echo; the filter swells over each bar; the wheel opens it.

Pad

06 Tsukumogami

Double, the Upper program a fifth above: saw and pulse swelling slowly in, the pulse width breathing, over a 16' triangle and saw with a pulse above them, which arrives first. Aftertouch opens the Upper's filter; the wheel brings in vibrato and deepens the chorus. Three notes at once.

07 Low Tide

The filter envelope inverted: each chord starts bright and darkens as it swells, then opens again as you let go. Play harder for a quicker attack. The wheel darkens it.

Texture

08 North Sea Haar

Sea fog: two triangles an octave and a fifth apart and plenty of noise through a resonant filter that wanders on its own, each note on a cutoff of its own, the pitch drifting. The wheel thickens the noise; aftertouch carries it into a ten-second reverb.

Keys

09 Lacquer Keys

An electric piano of triangle and a narrow pulse an octave up, with a tremolo that quickens the harder you play. The wheel deepens it; successive notes alternate left and right.

10 Kintsugi

A struck bell: the filter ringing close to self-oscillation and following the keys, over a triangle and a narrow pulse a tritone apart. Each note lands a hair out of tune with the last; harder notes ring more; the wheel opens the reverb.

Lead

11 Vermilion

A lead of saw and detuned pulse whose vibrato fades in once the note has spoken. The bend reaches an octave. Velocity narrows the pulse, aftertouch opens the filter, and the wheel deepens the vibrato and sends it into the echo.

Bass

12 Peli Bass Bin

Double, in the centre: a clean 16' triangle sub that never moves, under detuned saws through a resonant filter that talks in dotted eighths with the host. Play harder and it barks; aftertouch makes it growl; the wheel opens it. Three notes at once.

Init

13 Init

Every setting at its start: two saws, slightly detuned, through the filter at about 1.5 kHz. Start a sound from here.

Ways to start

ARPEGGIOS AND SEQUENCES	Welcome to Denki Digital, Abacus, or Night Ferry with a low note under a chord. Or any sound with an arpeggio preset.
CHORDS FROM ONE KEY	Harbour Lights for one chord on every key; Yamanote Line for the chords of a scale.
PADS AND TEXTURES	Tsukumogami, Low Tide, North Sea Haar. Try Double with the Upper program a fifth or an octave up (Upper Trans, 93).
KEYS AND BELLS	Lacquer Keys, Kintsugi: then turn Reso (32). For frequency-modulated bells, run LFO 1 at audio rate: Rate (62) high, its Depth (64) up, To DCO1 (65) on.
LEADS AND BASS	Vermilion, Peli Bass Bin. Turn Stereo (96) off for a bass, so its notes don't move from side to side.

Programs and your presets

Tsukumo 99 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 window under PROGRAM, at the right of the nameboard, to open the program menu. The two arrows under it step to the previous and next sound: the factory programs, then your own, then any designer banks. While one of your own plays, the window shows USR before its name.

The program menu

Factory programs	The twelve factory programs in their groups, each a submenu: Sequence, Split, Chord, Pad, Texture, Keys, Lead and Bass. Init follows on its own. Choosing one replaces the current sound; your changes to it are kept with the project until you choose another.
My Presets	Your own presets, grouped by the category you gave them.
Designer Banks	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.

Where they live

Your presets are in `Documents/Denki Digital/Tsukumo 99/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/Tsukumo 99/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

Installing on Windows

1. **Close your music software.** Windows can't replace a plugin that is in use.
2. Run `Tsukumo99-1.1.0-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.** Tsukumo 99 is under Denki Digital, listed as Tsukumo 99 Synth. If it isn't there, ask your host to rescan its plugins.

PLUGIN	`C:\Program Files\Common Files\VST3\Tsukumo 99.vst3`
STANDALONE	`C:\Program Files\Denki Digital\Tsukumo 99`, and in the Start menu under Denki Digital
THIS MANUAL	`Tsukumo 99 Manual.pdf` beside the standalone, and in the Start menu under Denki Digital Manuals
YOUR PRESETS	`Documents/Denki Digital/Tsukumo 99`

Installing on a Mac

Tsukumo 99 runs on macOS 12 or later, Apple silicon or Intel.

1. **Close your music software.**
2. Open `Tsukumo99-1.1.0-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.** Tsukumo 99 is under Denki Digital, listed as Tsukumo 99 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/Tsukumo 99.vst3`

AUDIO UNIT	`/Library/Audio/Plug-Ins/Components/Tsukumo 99.component`
STANDALONE	`/Applications/Denki Digital/Tsukumo 99/Tsukumo 99.app`
THIS MANUAL	`Tsukumo 99 Manual.pdf` beside the standalone, whichever parts you install, and on www.denkidigital.com, from Tsukumo 99's page
YOUR PRESETS	`Documents/Denki Digital/Tsukumo 99`

Free

Tsukumo 99 is free, with nothing to unlock and no licence to keep. It works fully, with no time limit and no rests, on any of your own computers. The notices for the fonts and code inside are in `THIRD-PARTY-NOTICES.txt`, in the `Licences` folder beside the standalone.

The window

The window-size control, the small square of corner marks low at the panel's right-hand edge, 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.

At the panel's left-hand edge, level with it, the small keyboard glyph shows or hides the on-screen keyboard. Hidden, the window gets shorter. Each project remembers whether the keyboard was showing.

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 Tsukumo 99's device in Live's Device View, untick Auto-Scale Plug-In Window, then open the window again. Tsukumo 99 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 and projects are left as they are. On a new computer, Windows or Mac, install, then copy `Documents/Denki Digital` across: your presets come with it. To uninstall on Windows, open Windows Settings, then Apps, then Installed apps, and choose Tsukumo 99. 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

VOICES	6; 3 + 3 in Double and Split
OSCILLATORS	2 per voice: triangle, saw, pulse; 16' to 2'; noise
FILTER	4-pole 24 dB low-pass, self-oscillating
ENVELOPES	2 ADSR
LFOS	2 per voice, up to about 250 Hz; a mod LFO
MODULATION	4-slot matrix
ARPEGGIATOR	9 modes, 16 steps, 59 patterns; chord generator
EFFECTS	Chorus, tape delay, reverb
FACTORY PROGRAMS	12, plus Init
CPU	1.7% of one core; 2.1% with effects and modulation
OUTPUT	Stereo
PANEL	1226 × 824, scalable from 60 to 160%
MIDI	Notes and velocity on every channel; pitch bend, mod wheel (CC 1), sustain pedal (CC 64), channel aftertouch; MIDI learn on the panel's controls
OSCILLATORS AND FILTER	Run at twice the host's sample rate
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

Notices

Tsukumo 99 is © 2026 Denki Digital Limited. Its sounds, programs, panel and this manual are the studio's own.

Using Tsukumo 99 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; it is free, with no licence file; 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: open `THIRD-PARTY-NOTICES.txt` in the `Licences` folder beside the standalone.

VST is a trademark of Steinberg Media Technologies GmbH, registered in Europe and other countries. Windows is a trademark of the Microsoft group of companies. Apple, Mac, macOS, Finder, Logic Pro, MainStage and GarageBand are trademarks of Apple Inc., registered in the U.S. and other countries. Other names of music software in this manual belong to their owners and are used only to say what Tsukumo 99 works with.

九十九

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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