SIX-PART ANALOG-VOICE SYNTHESIZER

Hyō

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Hyō is a six-part multitimbral synthesizer built on a model of a classic analogue voice chip: two oscillators, a four-pole filter and three envelopes in every voice.



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Hyō, from the first sound to the last setting.

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Six parts, one analogue heart.

This manual walks round the panel, then through the parts and multis, the oscillators, the filter, the envelopes and LFOs, the matrix, the arpeggiator and the effects, and how Hyō meets your host. Then every factory multi and sound, and at the end presets, installing and unlocking.

Welcome

Hyō is a six-part multitimbral synthesizer built on a model of a classic analogue voice chip. Each part is a whole synthesizer with its own sound, MIDI channel and key range, so one instance can be a bass, a pad, a lead and a bell at once, or six sounds stacked on one key.

Every voice has two oscillators (DCO 1 and DCO 2) with hard sync and cross modulation, a sub-oscillator and noise; a four-pole ladder filter with drive; three envelopes; and two LFOs, all tied together by a ten-slot modulation matrix. The six parts share one pool of voices: six of them in **Vintage**, as the rack synthesizers of the late eighties had, or twenty-four in **Modern**.

A factory program is a multi: all six parts and the effects at once. A sound is what one part plays. Hyō ships with twelve multis, chosen by ear, and Init; you can load any of the 19 sounds they play into any part, and save the whole multi as your own preset.

Five minutes with Hyō

1. Put Hyō on an instrument track and hold a chord. It opens on Hollow Hours: a hollow pad on part 1 over a floor of low saws on part 2, both on channel 1, in a long room. Hold it: the vibrato arrives late.
2. Click part 2 in the **Parts** column. The big knobs and the pages below now edit that part. Turn **Cutoff** and hear only the floor change.
3. Click the second line of the status window, PART 2 HOLLOW FLOOR, and choose another sound for part 2 from the categories.
4. Click the multi's name at the top of the status window and choose Performance, then Machine Pulse. Hold one key with your host running: a sixteenth-note bassline drives on by itself.
5. Choose Showcase, then Night Brass, and hold a chord for a few seconds: the two sections begin to move only once they have held a while.

> TIP
>
> Every part plays only what arrives on its own MIDI channel. If a part stays silent, check its channel in the Parts column (CH 1, CH 2 …) against the channel your track sends on.

The panel



Hyō on Hollow Hours, with the Filter / Amp page open.

1	**Status window**	The top line is the multi or your preset: its name, its bank and its place in the list. The arrows step through them; click the name for the program menu. The second line is the part being edited and its sound: click it for the sound menu. At the right, the voice mode and the voices in use.
2	**Parts** 1 to 6	A row for each part: its number, MIDI channel (or Omni) and sound, and a light for each voice it is playing. Click a row to edit that part.
3	**M and S**	Each part's Mute and Solo. While any part is soloed, only the soloed parts play.
4	**Output**	A scope of Hyō's output, steadied on the newest note, with that note's name and frequency in the corner.
5	**Voices** 6 or 24 lamps	The pool of voices. Each lamp lights with the number of the part playing it.
6	**Cutoff** 20 Hz to 20 kHz	The edited part's filter cutoff. See The filter and the amp.
7	**Resonance** 0 to 100 %	The filter's resonance. It whistles on its own from about 91 %.

8	**Drive** 0 to 24 dB	How hard the sound is driven into the filter: warmth, then growl.
9	**Env Amount** −100 to +100 %	How far the filter envelope moves the cutoff, up or down.
10	**Master** −60 to +6 dB	The level of the whole instrument.
11	**Voices** Vintage (6), Modern (24)	The size of the voice pool shared by all six parts.
12	**Tabs**	The nine pages: DCOs, Mix & PWM, Filter / Amp, Envelopes, LFOs, Matrix, Arp, Part and FX.
13	**Page**	The page chosen. Every page but FX edits the part chosen in the Parts column.
14	**Keys** Five octaves	Play the edited part on its channel (an Omni part on channel 1). The arrows at the ends move the keys an octave down or up.
15	**Keyboard switch**	Hides or shows the keys.
16	**Key and size**	The licence key, and the window size below it.

Handling the controls

KNOBS	Drag up or down; hold Shift for fine steps. The mouse wheel moves them too. Double-click returns a knob to its default.
CHOOSERS	The lit windows with a small arrow. Click for a menu of every choice, or drag up and down, or use the wheel, to step through them.
SWITCHES	Click to turn on or off. The bar lights while on.
MATRIX AMOUNTS	Drag left or right; Shift for fine. Double-click returns the amount to 0.

Parts, multis and voices

Six parts, each its own synthesizer, played from its own MIDI channel. Together with the voice mode, the master level and the effects they make a multi.

The parts

Click a part's row in the **Parts** column to edit it. The row lights, the frame round the big knobs reads Part 2 - Filter (or whichever), the status window names the part and its sound, and every page but FX belongs to it. The on-screen keys move to its channel.

Parts on the same channel play together: that is a layer. Give them key ranges that don't overlap (one up to B2, the other from C3) and they split the keyboard. Put them on channels of their own and a sequencer can play six different lines. The factory multis layer, on channel 1; the tip in Factory sounds and multis shows how to give each part a channel of its own.

Sounds

Click the second line of the status window for the sound menu. Init is at the top, a single saw with the filter open, and the 19 factory sounds follow in their categories: Bass, Lead, Pad, Brass, Keys, Pluck and Effect. The sound you choose loads into the part being edited. The part's channel, range, polyphony, level, pan and FX Send stay as they were; a sound that brings its own arpeggio sets the part's arpeggiator, and one that doesn't turns the arpeggiator and chords off. Whatever the part was playing stops cleanly first.

Tones from SysEx files

Hyō reads tone dumps from the British six-part rack synthesizer of the late eighties that it remembers, from your own `.syx` files. Nothing of that instrument is built in: you bring the tones.

1. Click the second line of the status window, and open the **SysEx Tones** submenu at the foot of the sound menu.
2. Choose Import .syx files... and pick one file or several. Hyō copies them into `Documents/Denki Digital/Hyo/SysEx Tones` and tells you how many tones it found.
3. Open the submenu again. Every tone in the folder is listed: a file holding one tone under the file's name, a file holding several as a submenu of its own, numbered 01, 02 and on. Choose one to load it into the part being edited.

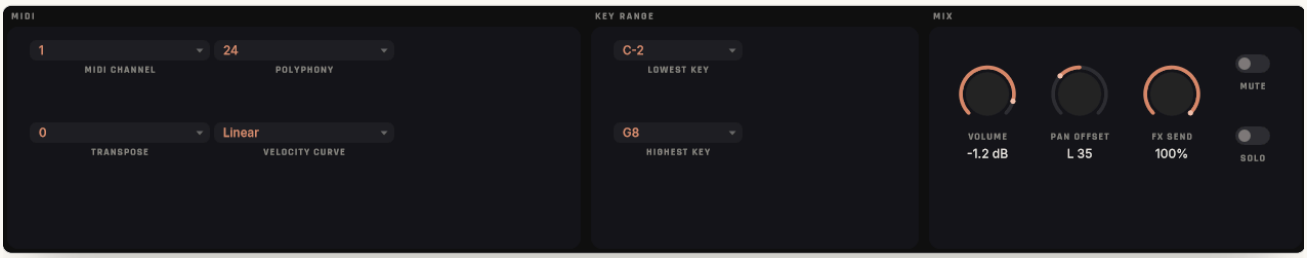
A tone is converted into Hyō's own settings as it loads, its modulation set out in the matrix, and its level brought to that of the factory sounds. Edit it like any other sound. A project, or a preset, keeps the tone as settings, under its name, so it opens without the file. Show the folder opens the folder in File Explorer; files you copy into it yourself are listed too. Only single tone dumps are read: any other SysEx in a file is passed over, and Hyō says how much.

The voice pool

All six parts draw their voices from one pool. In **Vintage** it holds six voices, so a chord on one part leaves fewer for the others, as on the rack synthesizers of the day. **Modern** holds twenty-four. The status window shows how many are in use, and the lamps under the scope show which part has each.

When a part reaches its own **Polyphony**, its oldest voice gives way to the new note, one already released first. When the whole pool is full, the oldest voice of any part gives way. Either way it fades out over 3 ms, so nothing clicks. A key played again while it still sounds takes its own voice again, from wherever its envelopes stand.

The Part page



The Part page: the edited part's channel, polyphony, range and mix.

MIDI Channel Omni, 1 to 16	The channel the part listens on. Part 1 starts on channel 1, part 2 on 2, and so on. Omni hears every channel.
Polyphony 1 to 24	The most voices this part may hold at once. 1 makes a poly sound play one note at a time, cutting the last.
Transpose −24 to +24 semitones	Moves the part's notes, after its key range has chosen them.
Velocity Curve Linear, Soft, Hard, Fixed	Soft answers a light touch more strongly; Hard needs a firmer one; Fixed plays every note as if struck at about 100.
Lowest Key, Highest Key C−2 to G8	The part's key range. Keys outside it pass the part by. Named as Live names them: middle C is C3.
Volume −60 to +6 dB	The part's level in the multi.
Pan Offset L 100 to R 100	Moves the part left or right, on top of its sound's own pan.
FX Send 0 to 100 %	How much of the part goes to the effects. At 0 the part stays dry. Starts at 100 %.
Mute, Solo	The same switches as the M and S in the Parts column.

The oscillators

Two oscillators in every voice, a sub below them and noise beside them. DCO 2 can follow DCO 1 in two ways: restarting with it (sync) and being bent by it (cross mod). Together they make most of Hyō's teeth.



The DCOs page, on Hollow Hours: a triangle on DCO 1, a narrow pulse on DCO 2 six cents sharp.

DCO 1 and DCO 2

Wave Saw, Triangle, Pulse, Saw + Pulse, Sine	The oscillator's shape. Saw + Pulse plays both at once.
Octave −2 to +2	In octaves.
Semi −12 to +12	In semitones.
Fine −100 to +100 ct	In cents. DCO 2 starts 7 ct sharp, for a gentle beat when both play.
Width 5 to 95 %	The pulse's width, for Pulse and Saw + Pulse. 50 % is a square; towards either end, thin and nasal.
Level 0 to 100 %	The oscillator's level into the filter. Init has DCO 1 at 100 % and DCO 2 at 0.

Both oscillators are made at twice the sample rate and every edge is smoothed where it falls, so even a high, synced lead stays clean.

Sync and Cross Mod

Sync, on DCO 2, restarts DCO 2's cycle every time DCO 1 begins one. DCO 2 then follows DCO 1's pitch, and tuning DCO 2 higher changes its tone instead of its note: sweep DCO 2's pitch from the matrix (the mod envelope, the wheel, an LFO) and you get the classic sync scream. Turn DCO 1's level down to hear DCO 2 alone.

Cross Mod lets DCO 1's wave bend DCO 2's speed as it plays, from a touch of grit to metal and bells. At full, DCO 2 swings from three times its speed down to a standstill. Two sines with cross mod make a bell; with sync as well, a tearing, metallic edge. Iron Lung and Drone Field use it to rust their drones.

Sub and noise

Sub Octave −1, −2	The sub is a square one or two octaves below DCO 1.
Sub 0 to 100 %	The sub's level.
Noise 0 to 100 %	White noise, for breath, air and percussion.
Cross Mod 0 to 100 %	DCO 1 bending DCO 2, above.

Mix & PWM



The Mix & PWM page: the wave mix, the PWM LFO, and each envelope's key follow and sustain switch.

Wave Mix balances DCO 1 against DCO 2. At 0 both play at their own levels; towards +100 % DCO 2 fades away until DCO 1 plays alone, and towards −100 % the other way. An envelope can sweep it: choose which with **Env Source** (Filter Env, Amp Env or Mod Env, which it starts on) and how far, either way, with **Env Depth**. A sound that begins as one wave and turns into the other is made here.

The **PWM** section moves each DCO's pulse width on its own, without spending a matrix slot. **PWM Rate**, 0.01 Hz to 20 Hz, sets the speed of a triangle LFO of its own that never restarts, so every voice of a chord moves together. **DCO 1 PWM** and **DCO 2 PWM** set how far each width swings, at full from one end of its range to the other. Each DCO's **PWM Source** is the PWM LFO or one of the three envelopes.

The **Envelopes** section belongs with the envelopes, and is explained there.

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The filter and the amp

A four-pole, 24 dB-an-octave ladder low-pass, modelled on a classic analogue voice chip, one for every voice. Drive it for warmth and growl; turn the resonance up and it sings.

The big knobs

Cutoff 20 Hz to 20 kHz	Where the filter begins to close. Starts at 8 kHz.
Resonance 0 to 100 %	A peak at the cutoff. From about 91 % the filter oscillates on its own, a clear sine that stays in tune. As on the chip, the bass thins as resonance rises: at full, the low end sits about 8 dB down.
Drive 0 to 24 dB	Pushes the sound into the filter's saturating input.
Env Amount −100 to +100 %	How far the filter envelope moves the cutoff: at full, eight octaves up (or down, below 0).

A sound set to self-oscillate starts each note with its filter already singing, as an analogue one does, so even a low note speaks at once. With **Key Track** at 100 % the whistle plays in tune across the keyboard, so the filter alone can be a sound.



The Filter / Amp page.

Filter

Key Track 0 to 100 %	How far the cutoff follows the keys, centred on middle C. At 100 % it moves an octave for every octave you play.
Env Amount −100 to +100 %	The same control as the big knob.

Velocity 0 to 100 %	How much velocity brightens the note. At 100 % the softest notes play up to four octaves darker than the hardest.

Amp

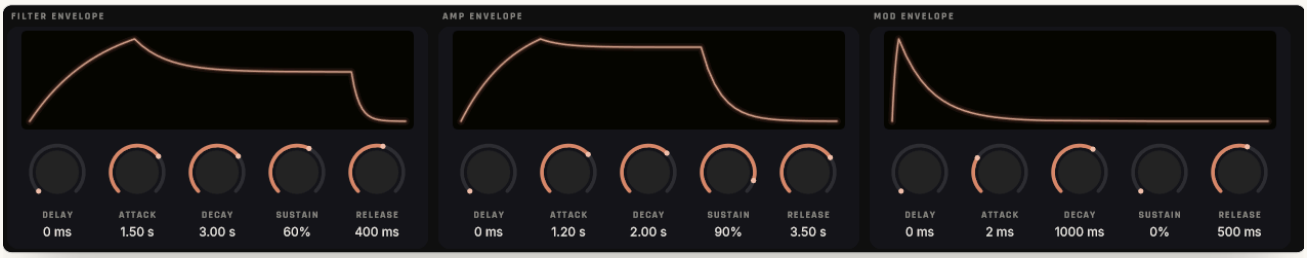
Level 0 to 100 %	The sound's level. Starts at 80 %.
Velocity 0 to 100 %	How much velocity sets the loudness. At 0 every note is as loud; at 100 % loudness follows velocity all the way. Starts at 50 %.
Pan L 100 to R 100	The sound's place in the stereo field. The part's Pan Offset adds to it.
Gain −24 to +24 dB	A trim on the sound's level. Each factory sound's Gain is set by measurement, so they sit together; use it to bring your own sounds into line.

Voice

Mono On or off	One note at a time, legato: a key played while another is held moves the pitch without a new attack, and letting go returns to the key still held.
Bend Range 0 to 24 semitones	How far the pitch bend wheel bends. Starts at 2.
Glide 0 to 5 s	Slides each note from the pitch of the part's last. Mono parts glide legato; poly parts glide too, each new note from the last one played.

Envelopes and LFOs

The three envelopes



The Envelopes page: each envelope drawn above its knobs.

The **Filter Envelope** moves the cutoff, by Env Amount. The **Amp Envelope** shapes each note's level. The **Mod Envelope** does nothing until you use it: in the matrix, as the Wave Mix's source (where it starts), or as a PWM source. All three are sources in the matrix too.

Each is a DADSR: a delay before it begins, then attack, decay, sustain and release, with the curves of a capacitor charging and discharging, quick to start and soft to settle. The picture above each one redraws as you turn its knobs.

Delay 0 to 10 s	Holds the envelope at zero after the note starts: a pad that blooms late, a swell that waits.
Attack 0.5 ms to 25 s	The rise to the top.
Decay 0.5 ms to 65 s	The fall from the top to the sustain level.
Sustain 0 to 100 %	The level held while the key is down.
Release 0.5 ms to 65 s	The fall to silence after the key is let go.

A note played again starts its envelopes from wherever they stand, so a retrigger never clicks.

Key follow and sustain

On the Mix & PWM page, each envelope has two more controls. **Key Follow**, 0 to 100 %, shortens the decay and release as you play higher, and lengthens them lower, centred on the E above middle C: at full, each octave up makes them about four fifths as long, as a struck string dies faster high up. The **Sustain** switch, on as Hyō starts, holds the sustain level while the key is down. Off, the envelope goes straight on into its release once its decay is done, key held or not: a pluck or a strike that ends by itself.

The two LFOs



The LFOs page.

The LFOs move nothing on their own: route them in the matrix. Slot 1 starts as the usual vibrato, LFO 1 on the pitch, brought in by the mod wheel.

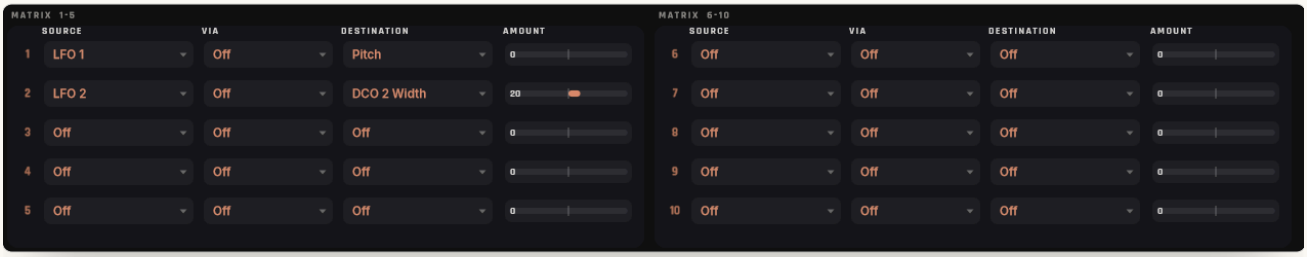
Wave Triangle, Sine, Saw Up, Saw Down, Square, Sample & Hold, Smooth Random	The shape. Sample & Hold jumps to a new random level each cycle; Smooth Random glides between them.
Rate 0.01 Hz to 1 kHz	The speed, while Sync is off. LFO 1 starts at 5 Hz, LFO 2 at 0.5 Hz.
Sync On or off	Locks the LFO to your host's tempo, at the Note Value. While the host plays it follows the song's position.
Note Value 8 Bars to 1/64	The length of a cycle when synced, with dotted and triplet values.
Key Restart On or off	On, each note starts the LFO from the top of its cycle. Off, every note picks up the part's LFO where it is, so a chord moves as one.
Delay 0 to 10 s	Fades the LFO in over this time after each note starts: a vibrato that waits.
Semitones On or off	Moves pitch in whole semitones: the LFO's share of any pitch destination is rounded to the nearest semitone. With Sample & Hold, a held key plays a stepped melody.

An LFO can run as fast as 1 kHz. Above 20 Hz, wherever it reaches the oscillators (their pitch, width and level, and the cross mod) or the amp, it is worked out for every sample, so you hear frequency, pulse-width and amplitude modulation as tone rather than as steps.

Without a host, in the standalone application, synced LFOs run at 120 BPM.

The matrix

Ten slots, each connecting a source to a destination by an amount, with a second source to scale it. Vibrato on the wheel, velocity on the brightness, an envelope on the pitch: every movement in a sound beyond the filter envelope is made here.



The Matrix page, on Hollow Hours: slot 1 a slight vibrato with no wheel needed (its amount is under 1, so it shows as 0), slot 2 LFO 2 slowly moving DCO 2's width.

Each slot reads across: **Source**, **Via**, **Destination** and **Amount**. The amount, −100 to +100, sets how far and which way the source moves the destination. **Via** scales it by a second source: LFO 1 via Mod Wheel is a vibrato the wheel brings in; Velocity via Velocity is velocity squared, so only the hardest notes go far. With Via at Off, the amount is used as it is. Slots add together where they share a destination.

Sources

VELOCITY	How hard the note was struck, after the part's velocity curve: 0 to 1.
KEY	The note played: 0 at middle C, rising to +1 five octaves above, −1 five octaves below.
MOD WHEEL	0 to 1. Each part follows the wheel on its own channel.
AFTERTOUCH	Channel pressure, 0 to 1.
PITCH BEND	The bend wheel, −1 to +1 (as well as bending the pitch by the Bend Range).
FILTER ENV, AMP ENV, MOD ENV	The three envelopes, 0 to 1.
LFO 1, LFO 2	The two LFOs, −1 to +1.
RANDOM	A new value for each note, −1 to +1, held for the note.
CONSTANT	Always 1: a fixed offset, for a slot that sets a destination with nothing moving it.

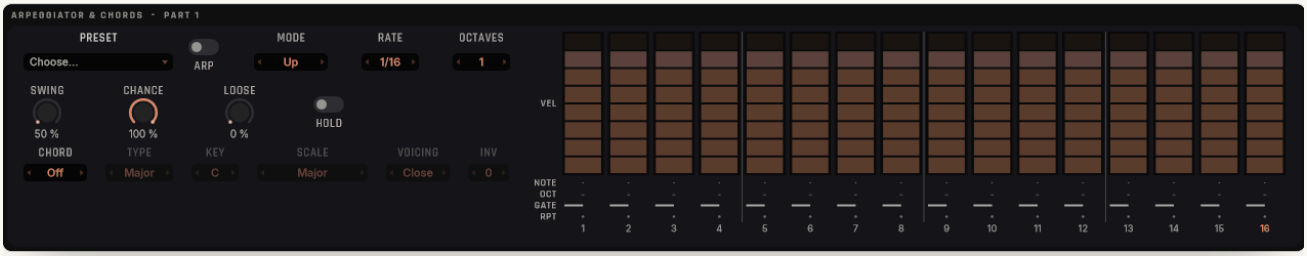
Destinations

PITCH, DCO 1 PITCH, DCO 2 PITCH	Both oscillators, or one. 100 is 24 semitones; 2, as slot 1 starts, is a vibrato of about half a semitone.
DCO 1 WIDTH, DCO 2 WIDTH	The pulse width. 100 swings it from the middle to the end of its range.
DCO 1 LEVEL, DCO 2 LEVEL	Each oscillator's level: +100 doubles it, −100 silences it.
SUB LEVEL, NOISE, CROSS MOD	Added to the knob's setting: 100 is the whole range.
CUTOFF	100 is six octaves.
RESONANCE	Added to the knob's setting.
DRIVE	100 is 24 dB.
AMP	The level: +100 doubles it, −100 silences it. A Constant at −100 with the wheel at +100 makes a sound the wheel fades in.
PAN	Moves the voice left or right.
LFO 1 RATE, LFO 2 RATE	100 makes the LFO sixteen times as fast, −100 a sixteenth.
FILTER ENV ATTACK, FILTER ENV DECAY, AMP ENV ATTACK, AMP ENV DECAY, MOD ENV ATTACK, MOD ENV DECAY	The envelopes' times: 100 makes the time sixteen times as long, −100 a sixteenth. Velocity at a negative amount gives a harder strike a snappier attack. Worked out as each note starts, and as it plays.
WAVE MIX	Added to the Wave Mix: +100 towards DCO 1 alone, −100 towards DCO 2.

> **FINE AMOUNTS**
>
> The amount shows in whole numbers, but it moves in much finer steps: hold Shift while you drag for the small amounts pitch needs. A drift of a few cents, like Lullaby Keys', is well under 1.

Arpeggiator and chords

Every part has its own arpeggiator and chord generator, between its MIDI channel and its voices, on your host's tempo. Six parts can run six patterns at once.



The Arp page, for the part being edited.

The chord generator comes first: each key becomes a chord. The arpeggiator then plays the held notes, or the chords, through a pattern of up to sixteen steps. Either can be used without the other.

While your host plays, the steps sit on its grid. Stopped, the pattern starts from the first key you play, at the host's tempo (120 BPM in the standalone). The step playing lights up.

Presets and settings

Preset 59, in five styles	Ambient, Classical, Electronic, IDM and Progressive patterns. Loading one sets every arpeggiator and chord setting but the chord key, which stays yours.
Arp On or off	Turns the arpeggiator on.
Mode Up, Down, Up-Down, Played, Random, Chord, Converge, Thumb, Walk	The order of the notes. Chord plays them all at once; Converge plays from the outside in; Thumb returns to the lowest between the others; Walk steps up or down at random.
Rate 1/4 to 1/32	The length of a step, with dotted and triplet values.
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 %	The odds of each step playing; a step that doesn't, rests. The pattern's first step always plays, to hold the bar.
Loose 0 to 100 %	Lets each hit fall a little late and a little softer, at random, like a hand.
Hold On or off	The notes keep playing after you let go. A fresh chord replaces the held one.

The chord generator

Chord Off, Chord, Scale	Chord plays one chord type on every key. Scale plays each key's own chord in a key and scale: in C major, D plays D minor.
Type Major to Cluster	In Chord mode: twenty types, from triads to Quartal and Cluster.
Size Triad, Seventh, Ninth	In Scale mode, in Type's place: how high the chords stack.
Key, Scale C to B; 18 scales	In Scale mode: church modes, pentatonics, blues, Hirajoshi, In Sen and more.
Voicing Close, Open, Wide	Open lifts every second note an octave; Wide adds the root an octave below.
Inv 0 to 3	Lifts the lowest notes an octave, one more for each step.

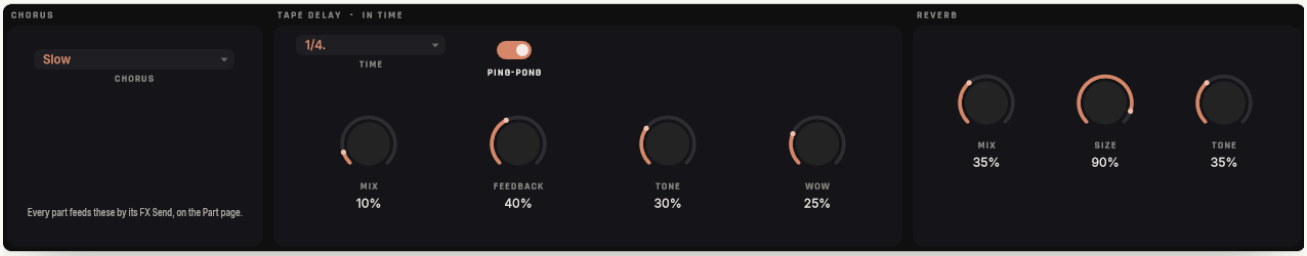
The pattern

Sixteen steps, read across in rows. Click a step's number below the grid to set the pattern's length.

VEL	Each step's velocity. Drag across the bars to draw. Click at the very bottom of a bar, or right-click it, to make a rest; double-click to return it to 100.
NOTE	A dot plays the mode's next note. Click for a chord tone, 1 to 8, instead (right-click steps back): 1-3-2-3 is an Alberti bass.
OCT	Shifts the step by up to two octaves: click to cycle, right-click to go back.
GATE	Short, Half, Long or Tie: click to cycle. Tie holds the note into the next step, so a mono part slides.
RPT	Plays the step's note one to four times within it: click to cycle.

Effects

A chorus, a tape delay and a reverb, shared by all six parts. Each part feeds them by its FX Send, on the Part page; what they add joins the untouched dry sound.



The FX page, on Hollow Hours: the slow chorus, ping-pong dotted quarters with a little wow, and a large, dark room.

The effects belong to the multi, not to a sound: loading a sound into a part leaves them as they are, and every factory multi sets its own. A bass with its send at 0 stays dry and centred under a wet pad.

Chorus Off, Slow, Fast, Deep	Widens and thickens. Slow for pads, Fast for a shimmer, Deep for a seasick sway.
Time 1/16 to 1/2	The delay in time with your host, with dotted and triplet values.
Ping-Pong On or off	The echoes bounce from side to side.
Mix 0 to 100 %	How loud the echoes are, on the Tape Delay.
Feedback 0 to 100 %	How many echoes follow.
Tone 0 to 100 %	The echoes' colour, from dark to bright.
Wow 0 to 100 %	Tape wow and flutter: a slow, unsteady pitch in the echoes.
Reverb: Mix, Size, Tone 0 to 100 % each	The reverb's level; its room, a decay from 0.4 s to 10 s; and its colour, from dark to bright.

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MIDI and the host

Channels

Each part listens on its own MIDI channel, or on all of them in Omni. A note goes to every part that hears it: on the part's channel, inside its key range, not muted, and not shut out by another part's solo. From one keyboard on channel 1, the factory multis layer and split. From a sequencer, give each part a channel.

To play six parts from six tracks, put Hyō on one track and send each of the other MIDI tracks to it on its own channel. Every host does this its own way: in Ableton Live, set a MIDI track's MIDI To to the track holding Hyō, then the channel; in Bitwig Studio, Reaper, FL Studio and Cubase, look for MIDI routing or sends to an instrument track, with a channel. Your host's manual has the details.

What Hyō answers

NOTES AND VELOCITY	Velocity passes through the part's Velocity Curve, then to the sound's Velocity controls and the matrix.
PITCH BEND	Bends each part on the channel by its Bend Range, and is a source in the matrix.
MOD WHEEL (CC 1)	A source in the matrix: vibrato in Init. The factory sounds leave it free for you to route.
SUSTAIN PEDAL (CC 64)	Holds the notes of the parts on its channel until it lifts.
CHANNEL PRESSURE	The Aftertouch source in the matrix.
ALL NOTES OFF, ALL SOUND OFF	The parts on the channel let go of their notes, or fall silent at once, and their arpeggiators and chords start afresh.

MIDI learn

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

A control on the panel is the part's own. Learned while part 3 is edited, the Cutoff knob's controller moves part 3's cutoff, whichever part you edit afterwards; choose part 1 and its Cutoff is free to learn a controller of its own. The voice mode, the master and the FX page are every part's.

The Arp page's knobs, menus and switches learn too, each part's own like the rest; its step pattern does not.

> HOSTS
> The controller reaches Hyō 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.

Automation

Every control of every part is a host parameter, named with its part: P1 Cutoff, P3 MIDI Channel, P2 Arp Rate. The voice mode, the master and the effects come first in the list. Your host can automate any of them, and records your moves on the panel cleanly. Or learn a controller onto a control on the panel (MIDI learn, above).

Your host's program list, where it has one, shows the factory multis.

Tempo, latency and output

The synced LFOs, the arpeggiators and the tape delay all follow the host's tempo. Hyō reports a latency of 16 samples, which your host makes up for. The output is stereo, and folds to mono on a mono track. When your host bypasses Hyō, every voice stops at once and nothing plays until it comes back; the sustain pedal is still followed, so it isn't left down.

Factory sounds and multis

Twelve multis, chosen by ear, and the 19 sounds they play: industrial edges against calm, brooding passages. Every multi puts its parts on channel 1, so each plays from one keyboard, in Modern voices, with its own chorus, delay and reverb. The numbers are each one's place in the list, as the status window shows it; Hyō opens on the first.

Multis

01 Hollow Hours

Showcase. A triangle and a narrow pulse, the pulse's width slowly breathing, on the left; two low saws as a floor on the right. A slight vibrato arrives after 1.8 seconds. Hold chords.

02 Static Choir

Showcase. Two thin pulses with a breath of noise, each note sliding up into tune as it starts, the filter wandering at random; an octave above, a second choir, quieter. Hold chords.

03 Distortion Bloom

Showcase. Two saws driven hard into a low resonant filter that blooms open over four seconds, a quiet, clean sine an octave up inside it. Give it time.

04 Night Brass

Showcase. Two brass sections, left and right, swelling and settling. Hold a chord: after two and a half seconds each begins to move, its brightness and its place in the stereo field drifting.

05 Iron Lung

Showcase. A saw and pulse an octave down, crossed, with noise, driven into resonance, breathing in and out every five or six seconds; a pure sine two octaves down beneath it. Hold low notes.

06 Drone Field

Showcase. A saw an octave down crossed by a triangle, the cross mod and the filter wandering very slowly at random, a thin, high whine rising out of it over six seconds, in a deep chorus. Hold low notes.

07 Rust Lullaby

Showcase. Worn music-box keys, a triangle and a sine an octave up, wavering a little in pitch, over a rusted drone of two driven saws an octave down.

08 Broken Keys

Showcase. A triangle keyboard with a quiet saw, its pitch stepping a few cents at random twice a second, through a wavering tape delay. Play softly.

09 Machine Pulse

Performance. Hold one key, your host running: a driving sixteenth-note bassline two octaves down, accented on the beat, the fifth on two steps and the octave above on two more, driven at 16 dB.

10 Night Bass

Performance. A dark mono bass two octaves down: saw, pulse and sub, a short glide, a little drive. Play it as a line.

11 Glass Arp

Performance. Hold one key: a minor ninth played downwards through two octaves in dotted eighths, on a sine with glass two octaves above, in long echoes.

12 Low Signal

Performance. A dark mono lead an octave down: a narrow pulse and a saw below it, gliding between notes, vibrato after 0.7 of a second, a long echo. Play it legato.

13 Init

A single saw, the filter open, on every part, each on its own channel. Vintage, no effects. Start here.

Sounds

Each part of the multis is a sound of its own, to load into any part from the status window's second line. Hyō sets each one's Gain by measurement, so they sit together however you combine them.

Deep Sine

Bass. A pure sine two octaves down, swelling in over three seconds: Iron Lung's floor.

Machine Pulse

Bass. Machine Pulse's sixteen steps on a driven saw and pulse with the sub, through the chord generator.

Night Bass

Bass. Saw, pulse and sub, mono, a 30 ms glide, a little drive.

Low Signal

Lead. A narrow pulse and a saw an octave below, mono, gliding; vibrato after 0.7 of a second.

Hollow Hours

Pad. A triangle and a breathing narrow pulse with the sub; a slight vibrato after 1.8 seconds.

Hollow Floor

Pad. Two saws an octave down, seven cents apart, filtered low: Hollow Hours' floor.

Static Choir

Pad. Two thin pulses and noise, each note sliding up into tune, the filter wandering at random.

Static Choir High

Pad. Its partner, an octave up, slower to arrive.

Distortion Bloom

Pad. Two saws driven at 20 dB into a low filter that blooms over four seconds.

Clean Sine

Pad. A sine an octave up, swelling in over three seconds.

Night Brass

Brass. Saws an octave apart, the filter following the swell; movement on the brightness and pan after 2.5 seconds.

Night Brass II

Brass. Its partner, detuned the other way, moving after 2.8 seconds and to the other side.

Lullaby Keys

Keys. A triangle and a sine an octave up, struck, wavering a little in pitch like worn tape.

Broken Keys

Keys. A triangle and a quiet saw, struck, the pitch stepping a few cents at random.

Glass Arp

Pluck. A sine with a lightly crossed triangle two octaves above, a minor ninth arpeggiated downwards.

Iron Lung

Effect. A crossed saw and pulse an octave down, noise and drive, a slow sine breathing on the filter and the level.

Drone Field

Effect. A saw an octave down crossed by a triangle, the cross mod and filter wandering very slowly.

High Whine

Effect. A thin pulse an octave up, rising over six seconds: Drone Field's whine.

Rust Drone

Effect. Two saws an octave down, five cents apart, driven, the filter drifting slowly.

Ways to start

PADS	Hollow Hours or Static Choir: hold chords and let the movement arrive.
WEIGHT	Distortion Bloom or Night Brass, chords held for a few seconds.
DRONES	Iron Lung or Drone Field, held low.

A SEQUENCE	Machine Pulse or Glass Arp: one key, your host running.
A LINE	Night Bass, or Low Signal played legato so it glides.
A SEQUENCER	Give each part its own channel on the Part page (part 2 on channel 2, and so on), then a MIDI track on each channel.
YOUR OWN SOUND	Init, then a second oscillator, Sync, and the Mod Env on DCO 2 Pitch in the matrix.

拾弐 HYŌ

Multis and your presets

Hyō keeps two kinds of program: the factory multis it ships with, which never change, and your own presets, which are plain text files you can keep, copy and share. Either one is the whole instrument: all six parts with their sounds, channels, ranges, arpeggiators and chords, the voice mode, the master level and the effects.

Click the top line of the status window, where the multi's name is, to open the program menu. The arrows at its left step through the factory multis, then your own presets, then any designer banks; at either end they stop, so you never lose your edits by going round.

The program menu

Showcase, Performance	The twelve factory multis, by kind: layered sounds on one keyboard, then single parts to play. Hyō opens on the first, Hollow Hours. Init is below them.
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 instrument over your own preset of the same name. Only offered while one of your own is loaded.
Save As...	Saves the instrument as a new preset, with a name, a category and an author. If you already have one of that name, Hyō asks before replacing it.
Rename...	Renames your own preset, and its file with it.
Delete...	Deletes your own preset, after asking. Its file goes, so this can't be undone.
Import Preset...	Adds a preset file someone has sent you to your own, and loads it.
Export Preset...	Saves a copy of the preset loaded wherever you choose, ready to send.
Open Preset Folder	Shows the folder in File Explorer, or in the Finder on a Mac.

Choosing a factory multi replaces all six parts and the effects. While one of your own presets is loaded, the status window shows its name with its category and USR at the right; a note such as Saved or Deleted shows there for a few seconds after you use the menu.

There is no separate file for one part's sound. The sound menu (the second line of the status window) loads a factory sound or an imported tone into a part; to keep a part as you have changed it, save the whole multi.

Where they live

Your presets are in `Documents/Denki Digital/Hyo/Presets`, one `.txt` file each. Designer banks go beside them, in `Documents/Denki Digital/Hyo/Banks`, one folder per bank. The files are readable text, so a preset can be sent in an email as easily as attached. A tone imported from SysEx travels inside the preset as Hyō's own settings, so whoever opens it doesn't need your `.syx` file. Back the folder up with your music.

Your host saves the whole instrument 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 `Hyo-1.0.0-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.** Hyō is under Denki Digital, listed as Hyo Synth. If it isn't there, ask your host to rescan its plugins.

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

Installing on a Mac

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

1. **Close your music software.**
2. Open `Hyo-1.0.0-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.** Hyō is under Denki Digital, listed as Hyo 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/Hyo.vst3`
AUDIO UNIT	`/Library/Audio/Plug-Ins/Components/Hyo.component`
STANDALONE	`/Applications/Denki Digital/Hyo/Hyo.app`
THIS MANUAL	`Hyo Manual.pdf` beside the standalone, whichever parts you install, and on www.denkidigital.com, from Hyō's page
YOUR PRESETS	`Documents/Denki Digital/Hyo`
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 low at the panel's right-hand edge, just above 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, Hyō 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 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.

Hyō's natural size is 1360 × 704. The small keyboard glyph low at the panel's left-hand edge hides the on-screen keys, and the window grows shorter (1360 × 636 at its natural size); click it again to bring them back. Your project keeps whether the keys show, the part you were editing and the page that was open.

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 Hyō's device in Live's Device View, untick Auto-Scale Plug-In Window, then open the window again. Hyō 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 Hyō. 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**.

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Technical

PARTS	6, each on its own channel
VOICES	Vintage: 6. Modern: 24
OSCILLATORS	2 per voice; saw, triangle, pulse, saw + pulse, sine; sync, cross-mod, sub, noise; 2x oversampled
FILTER	4-pole ladder, 2x oversampled, drive to 24 dB
ENVELOPES	3 DADSR
LFOS	2, up to 1 kHz; a PWM LFO
MODULATION	10-slot matrix, 24 destinations
ARPEGGIATOR	One per part
EFFECTS	Chorus, tape delay, reverb, with per-part sends
FACTORY CONTENT	12 multis, chosen by ear, plus Init; the 19 sounds they play
CPU	1.6 to 10.2% of one core across the factory multis
LATENCY	16 samples
PANEL	1360 × 704, scalable from 60 to 160%
MIDI	Each part on its own channel, or Omni; mod wheel, sustain pedal, pitch bend and channel pressure; MIDI learn on the panel's controls
OUTPUT	Stereo, or mono on a mono track
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	1.0.0

Notices

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

Using Hyō 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.

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 Hyō works with.

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電 DENKI DIGITAL

Inspired by Tokyo. Built in Aberdeen.

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