panharmonium _travelers guide _for resynthesizing the cosmos

33	12	6.4 s
oscillators	spectra · 12 presets	longest slice

› then noon = 12 o'clock tags = the panel drawing

listens to any audio · redraws its spectrum with up to 33 oscillators · 12 spectra · 12 presets

01 what it is

ph_01

listens	analyzes any audio, one slice at a time · stereo ins are summed to mono
redraws	up to 33 oscillators rebuild that spectrum · the output is mono
remembers	freeze a slice and play it like an oscillator · 12 spectra + 12 presets

02 the slice

ph_02 · fig.01

slice	how often it re-analyzes · 17 – 200 ms
multiplier	stretches it ×1 … ×32 (up to 6.4 s) · LEDs flash at the result
[tap/opt] tap/sync	one tap or pulse = start a new slice now · several = set the rate
note	tap/sync is a tap-tempo jack, not a clock input · last one wins
slice clock out	a trigger at the start of every slice

__fig.04 : multiplier

after tapping

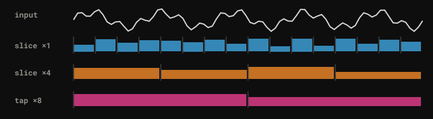
multiplier after taps or a tap/sync pulse train

1	2	4	8	16	32
÷8	÷4	÷2	tap	×2	×4
32nd	16th	8th	quarter	half	whole

tapped quarters · 8 keeps them · lower numbers divide, higher multiply
with the slice knob instead, the multiplier only lengthens (×1 … ×32)

__fig.01 : slices

slice × multiplier



tap: ×8 = your taps · 4 2 1 faster · 16 32 slower

10 first flight

ph_10 · first sound

1. press preset 1 (neutral settings)
2. a full mix into L · listen to the outputs
3. center freq and bandwidth to noon
4. [output mode] to L-FX-R · mix to wet
5. turn voices down, slice up
6. press [freeze] on something you like

03 what it hears

ph_03 · fig.02

center freq	the middle of the listening range · 20 Hz – 11.5 kHz
bandwidth	noon (max) = everything · left = narrower bands · right = wider notches
fc cv bw cv	each has its own attenuverter (noon = off)
silent?	check these two first · a narrow band with nothing in it = no sound

__fig.02 : bandwidth

pass or notch



dashed line = center freq · orange = what drives the oscillators

04 modifiers

ph_04

voices	only 1 2 3 4 5 6 8 11 15 21 27 33 · fewer is often better (bass lines, bright waves)
blur	spectral lag · up = slower changes · max = frozen
feedback	sends the output back in · max = sustains with no input
[freeze]	holds the current spectrum while pressed

05 oscillator bank

ph_05

waveform	sine · tri · saw · pulse + crossfading sine and saw (blend across the slice)
freq	±7 semitones · adds to 1v/oct and fm (attenuverter)
octave glide	–2 … +3 octaves · glide per oscillator
mix	dry input ↔ resynthesis

__fig.06 : between slices

waveform · glide



one oscillator's pitch over four slices · crossfade time = the slice length

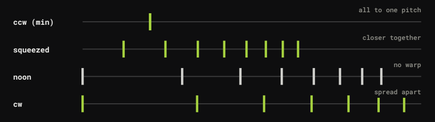
06 option layer

ph_06 · hold + turn

[output mode] + slice	drums mode: turn slice to min (LED on) · turn again alone to leave
[output mode] + freq	spectral warp: cw spreads, ccw squeezes · noon cancels · LED = warp on
[tap/opt] + freq	tune in semitone steps
[freeze] + [tap/opt]	1 s: freeze tap mode (multiplier LEDs steady) · taps grab and hold slices

__fig.05 : spectral warp

output mode + freq



hold output mode + turn freq · noon cancels · warped LED on

07 cv1 · cv2

ph_07 · up to 3 targets each

cv1	multiplier · voices · feedback · [tap/opt] + turn that knob
cv2	waveform · octave · glide · [output mode] + turn that knob
see / toggle	keep holding: spectra LEDs show cv1, preset LEDs show cv2 · press their buttons to toggle
fixed	blur 1v/oct fm mix have their own jacks

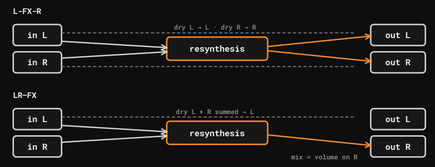
08 output mode

ph_08 · remembered at power off

L-FX-R	inputs pass to L and R · resynthesis in the middle of both
LR-FX	inputs summed on L · resynthesis on R · mix acts like a VCA on R
mono	into L (feeds R) · listen to R out

__fig.07 : output mode

remembered at power off



mono: into L (feeds R) · listen to R

11 spectra · presets

ph_11 · 12 each

load 1 – 6 — click
top row 1 – 3, bottom 4 – 6 · click again to deselect

load 7 – 12 — double-click
same buttons · the LED flashes

save — hold 3 s
double-click and hold for 7 – 12 · hold [freeze] while saving a spectrum

last one wins — fc · bw
a spectrum keeps its own center freq and bandwidth · the newest pick takes over

12 utilities

ph_12 · hold tap/opt + freeze + output mode

+ preset 1	software version (spectra LED . preset LED)
+ preset 4 · 5	back up everything to WAV from L out · restore from WAV into cv1
+ preset 6	save or load single spectra and presets as WAV
update	power on holding spectra 5 + 6 › [tap/opt] › play the WAV into 1v/oct

13 try these

ph_13 · factory

preset 6 · cylons — freeze first
freeze a spectrum, pick cylons, then unfreeze into live input

preset 9 · 12 — feedback
crazy swarm · dearth of fifths (works with no input)

spectra 7 – 9 — peff waves
complex waves from a buchla · sweep center freq and bandwidth

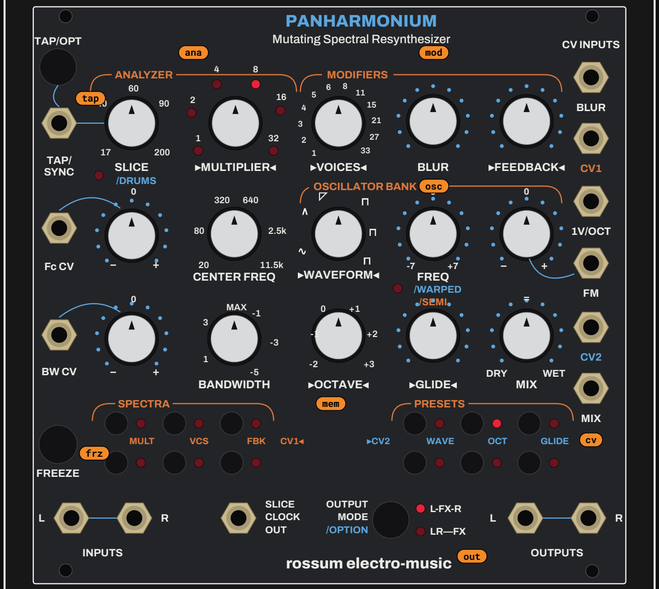
14 tips

ph_14 · manual

pick a part	narrow bandwidth isolates the bass or vocal of a mix · narrowest picks single harmonics
bass lines	one voice often follows a bass line better than many
saving	keep tapping [freeze] until a spectrum you like, keep holding it while you save
blur cv	freezes only at max · from a knob at min that takes about 10 V
speech	regular waves keep words clear · crossfade waves suit drones
no sound?	check center freq + bandwidth, then mix and output mode

__fig.03 : the panel

numbers match the legend



ana	analyzer · slice · multiplier · center freq · bandwidth
mod	modifiers · voices · blur · feedback
osc	oscillator bank · waveform · freq · octave · glide · mix
tap	tap/opt · tap/sync · slice rate · option layer
frz	freeze · hold the spectrum
mem	spectra · presets · click 1 – 6 · double-click 7 – 12 · hold 3 s saves
out	output mode/option · L-FX-R ↔ LR—FX · option layer
cv	cv inputs · blur · cv1 · 1v/oct · fm · cv2 · mix

09 specs

ph_09

voices	1 – 33 digital oscillators · mono analysis, mono resynthesis
memory	12 spectra · 12 presets · backup to WAV
power	140 mA +12 V · 30 mA –12 V
power cable	pins 9 and 10 open by design · safe if reversed