source ..... make noise · soundhack
rev ..... 2026.10

# spectraphon _travelers guide _for mastering alien alchemy

| 2 sides | 4 modes each | 16 arrays per side |
|---|---|---|

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

dual spectral oscillator · each side: sam (input drives harmonics) or sao (plays stored arrays) · noise and chaos modes · by tom erbe

## 01 what it is

sp_01

| | |
|---|---|
| two sides | A and B, mirror images · each is an oscillator in its own mode |
| a spectrum | a set of harmonic levels · not a recording · plays at any pitch |
| like a complex osc | `freq` `partials` fm bus, follow/sync and `sine` work the same in every mode |

## 02 modes

sp_02 · fig.01 · mode button

| | |
|---|---|
| sam · off | the input sets harmonic levels · silent without input |
| sao · lit | always oscillates · plays spectra from a stored array |
| noise · chaos | press on past sao (fw sp52+) · the centre LEDs show which: noise 01, chaos 10 |
| mix them | each side has its own mode · fm one with the other either way |

## __fig.01 : sam and sao

mode off · mode lit




## 10 first flight

sp_10 · first sound

1. side A: mode off (sam)
2. a voice or drum loop into `a-in` · knob to the tick
3. `partials` full · listen to `odd`
4. turn `slide` then `focus`
5. play `1v/oct` like any vco
6. `[ shift ]` + `[ array ]` to capture, then press mode for sao

## 14 tips

sp_14 · manual p.34 – 35

| | |
|---|---|
| odd vs even | echo only the evens · drone the odds, sequence evens with `in` |
| stereo ripple | pan odd and even apart, then move `partials` |
| cross-patch | side A's follower into its slide · side B's random into A's focus |
| trigger voice | sam: trigger into the input, follower into focus |
| sam → sao | unpatch the input: in sao it detunes the evens |

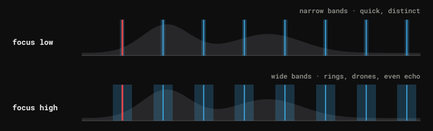
## 03 sam

sp_03 · spectral amplitude modulation

| | |
|---|---|
| `a-in` | input level · ticks mark modular and line level |
| `slide` | where the input's first harmonic sits · lower = brighter output |
| `focus` | band width · low = sharp, quick · high = rings, drones, even echo |
| `sub/cv` | envelope follower of the input · try it into `slide` or `focus` |

## __fig.05 : slide · focus (sam)

what the bands hear




grey = the input · red line = first harmonic, set by slide
slide lower than the input's pitch = brighter output

## 04 sao

sp_04 · spectral array oscillation

| | |
|---|---|
| `slide` | picks the spectrum: first (ccw) to last (cw) in the array |
| `focus` | cw = compress (brighter, even) · ccw = expand (darker, punchier) |
| `[ shift ]` 2 s | planar style: focus = fine, slide = coarse |
| `clk` | steps through the array · adds to slide and focus |
| `a-in` | detunes the even harmonics up to an octave · cv = fm for evens only |

## __fig.11 : array slots

16 per side




files SPECA000.WAV … SPECB015.WAV on the microSD · empty slot = default array
hold shift (this side) + shift (other side) to pick · centre LEDs show it in binary

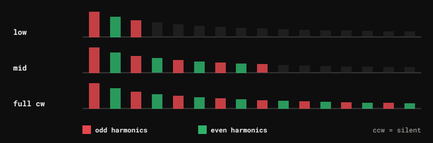
## 05 shared controls

sp_05 · every mode

| | |
|---|---|
| `freq` + `fine` | core pitch with `1v/oct` · `sine` always plays it, even under fm |
| `partials` | silent → low → high harmonics · alternates odd and even · a timbre vca |
| `odd` `even` | unpatch even and odd carries both |
| `sub/cv` | sao: sub osc (A saw, B saturated sine) |

## __fig.04 : partials

low → high · odd / even alternate



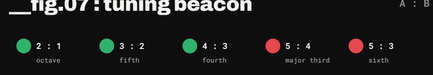

## 06 fm bus · follow · sync

sp_06

| | |
|---|---|
| `index A` `index B` | internal fm from the other side · both ways at once, no feedback |
| `[ follow/sync ]` | lit = follow: B pitch becomes an offset from A (noon = 0) |
| flashing | sync: follow + B hard-synced to A · strong sweeps |
| beacon | green = octave, fifth, fourth · red = third, sixth |
| tip | turn follow on before tuning B |

## __fig.07 : tuning beacon

A : B




ratios of A to B, just intonation · not equal temperament
**turn follow on first, then tune B until the beacon lights**

## 07 shift layer

sp_07 · hold shift

| | |
|---|---|
| `[ shift ]` + `[ array ]` | sam: start / stop array capture · other modes: low frequency (shift stays lit) |
| `[ shift ]` + `[ cv ]` | sub/cv: sub · stepped random · smooth random · triangle · ramp |
| `[ shift ]` + other | shift pick array 0 – 15 for this side (binary on the centre LEDs) |
| … hold 2 s | delete that array, back to default |
| `[ shift ]` | tap = manual clock · tap tempo for the LFOs |

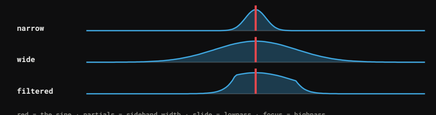
## 08 noise · chaos

sp_08 · fw sp52+

| | |
|---|---|
| noise | two sines + noise · partials = sideband width · slide lp, focus hp |
| chaos | each sine gets a partner · focus = ratio · partials = cross-mod · slide = feedback |
| `a-in` | detunes the pair up to an octave, as in sao |

## __fig.10 : noise mode

sidebands




red = the sine · partials = sideband width · slide = lowpass · focus = highpass

## 11 capturing arrays

sp_11 · fig.02

**before** — partials full
fm bus off · partials full cw and unmodulated

**free** — no clock 3 s
1024 spectra in about 1 s

**clocked** — clock in
one spectrum per pulse · shift + array again stops it

**tip** — keep it moving
static or silent parts become dead spots on slide

## __fig.02 : capture

sam · shift + array




## 13 sub/cv · clocking

sp_13 · shift + cv · manual p.31

| | |
|---|---|
| 1 | sub osc (sao) · envelope follower (sam) · sub also in sam (sp38+) |
| 2 · 3 | stepped random · smooth random |
| 4 · 5 | triangle lfo · ramp lfo |
| `clk` + `[ shift ]` | in modes 2 – 5 these clock the cv, not the array |
| no clock | tap `[ shift ]` for tempo · slowest one tap per 3 s |

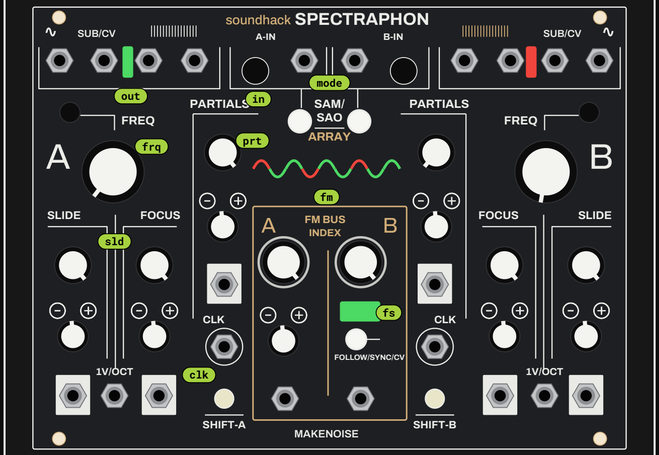
## 09 specs

sp_09

| | |
|---|---|
| size | 34 hp |
| power | 230 mA +12 V · 55 mA –12 V |
| arrays | 16 per side on microSD · SPECA000.WAV … |
| firmware | sp_.dat on the card · power on holding mode B |

## __fig.03 : the panel

numbers match the legend




| | |
|---|---|
| `out` | **outputs** · sine · sub/cv · odd · even |
| `in` | **a-in** · **b-in** · input level / even detune |
| `mode` | **sam/sao/array** · mode · shift + = capture / low freq |
| `frq` | **freq** · **fine** · core pitch + 1v/oct |
| `prt` | **partials** · harmonic amount |
| `sld` | **slide** · **focus** · shape or pick the spectrum |
| `fm` | **fm bus index** · A ← B · B ← A |
| `fs` | **follow/sync** · B follows or syncs to A |
| `clk` | **clk** · **shift** · step array · second layer |

## 12 reset

sp_12

| | |
|---|---|
| modes | power on holding both `[ shift ]` buttons |
| one array | delete its file from the card, or hold both shifts 2 s |