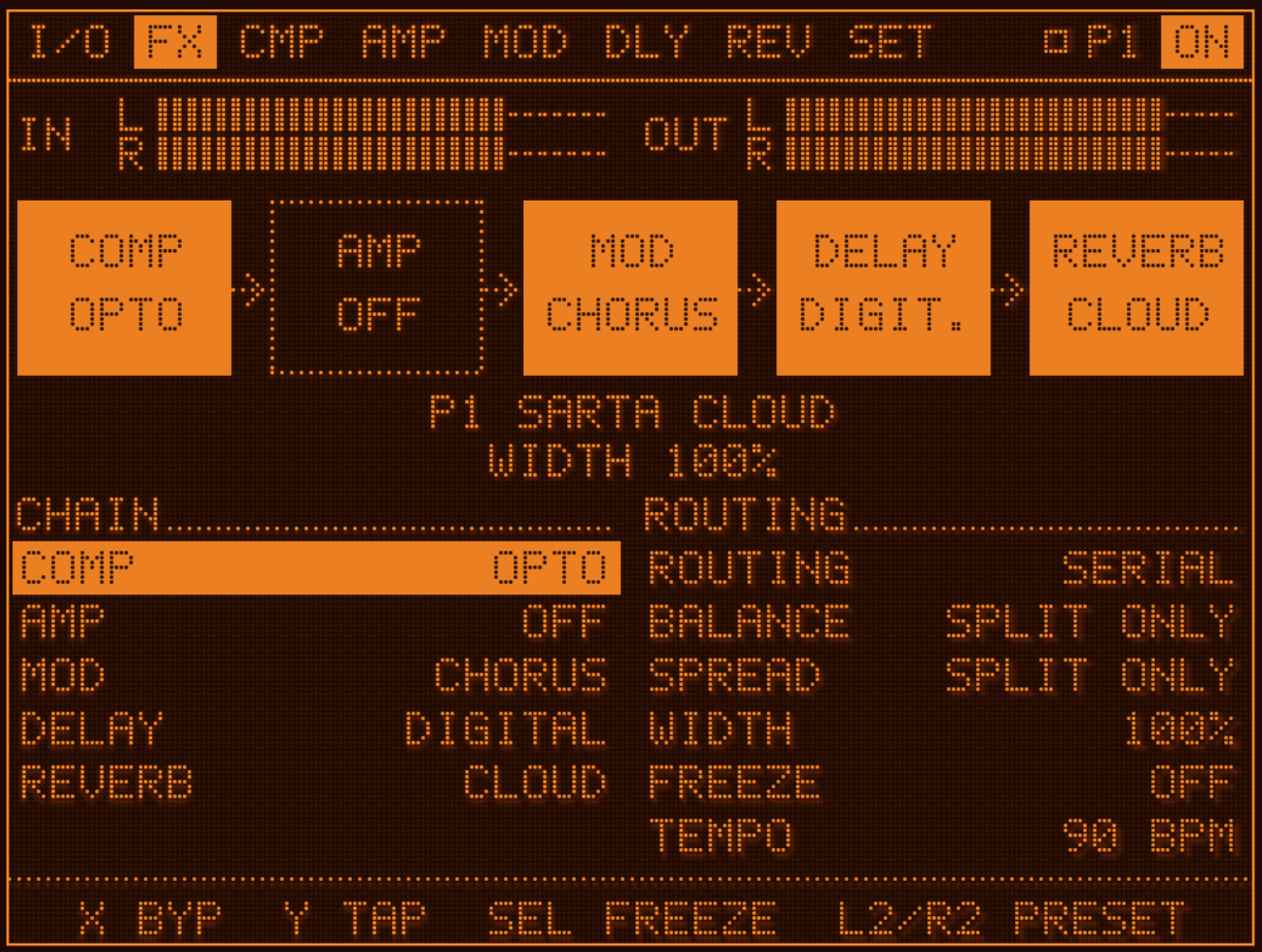
BRICKWORLD

BrickAmbientFX

Sarta Edition

Ambient stereo multi-effect for the TrimUI Brick



User manual

Version 1.0.2 · November 2026

brickworldhub.com

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What BrickAmbientFX is

BrickAmbientFX turns your TrimUI Brick into a stereo effects unit made for ambient music. You plug a synth or an audio interface into the Brick's USB-C port, the sound goes through five effects, and comes out of the Brick's headphone jack into your mixer or audio interface.

The idea comes from compact multi-effects like the Zoom Neurig: a compressor, an amp with cabinet, modulation, delay and reverb, in a fixed order or split in two, with 16 presets. Delay, reverb and modulation go much further than usual, for long tails, slow washes and textures: shimmer and cloud reverbs, reverse and dual delays, glitch, and a FREEZE that holds the sound for ever.

What you need

- A TrimUI Brick with KNULLI (tested on KNULLI Scarab).
- A **USB audio device**: a synth with USB audio, or a class-compliant USB audio interface (any source on its inputs then goes through the effects). BrickAmbientFX does not use the Brick's built-in mic.
- A cable from the Brick's headphone jack (3.5 mm stereo) to your mixer, audio interface or headphones.
- Optional: a MIDI controller over USB, to move settings with knobs, change presets and follow MIDI clock.

How it is connected

```
Synth / audio interface → USB-C → Brick → headphone jack → mixer / interface
```

Good to know: the time between what goes in and what comes out is about 20 ms with Latency set to Low, depending also on the Latency setting on the I/O page (the I/O page shows the real figure).

Install and update

Download the zip from the BrickAmbientFX page on brickworldhub.com and unzip it on your computer. You get a folder **BrickAmbientFX_v1.0.2**.

- Put the Brick's SD card in your computer.
- Copy everything inside the folder (`BrickAmbientFX.sh`, the `.keys` files and the `brickambientfx` folder) to `roms/ports` on the card.
- Put the card back in the Brick and start **BrickAmbientFX** from **Ports**. Not in the list? Update the games list in the KNULLI menu.
- The first start unpacks NumPy, so it takes a few seconds more.

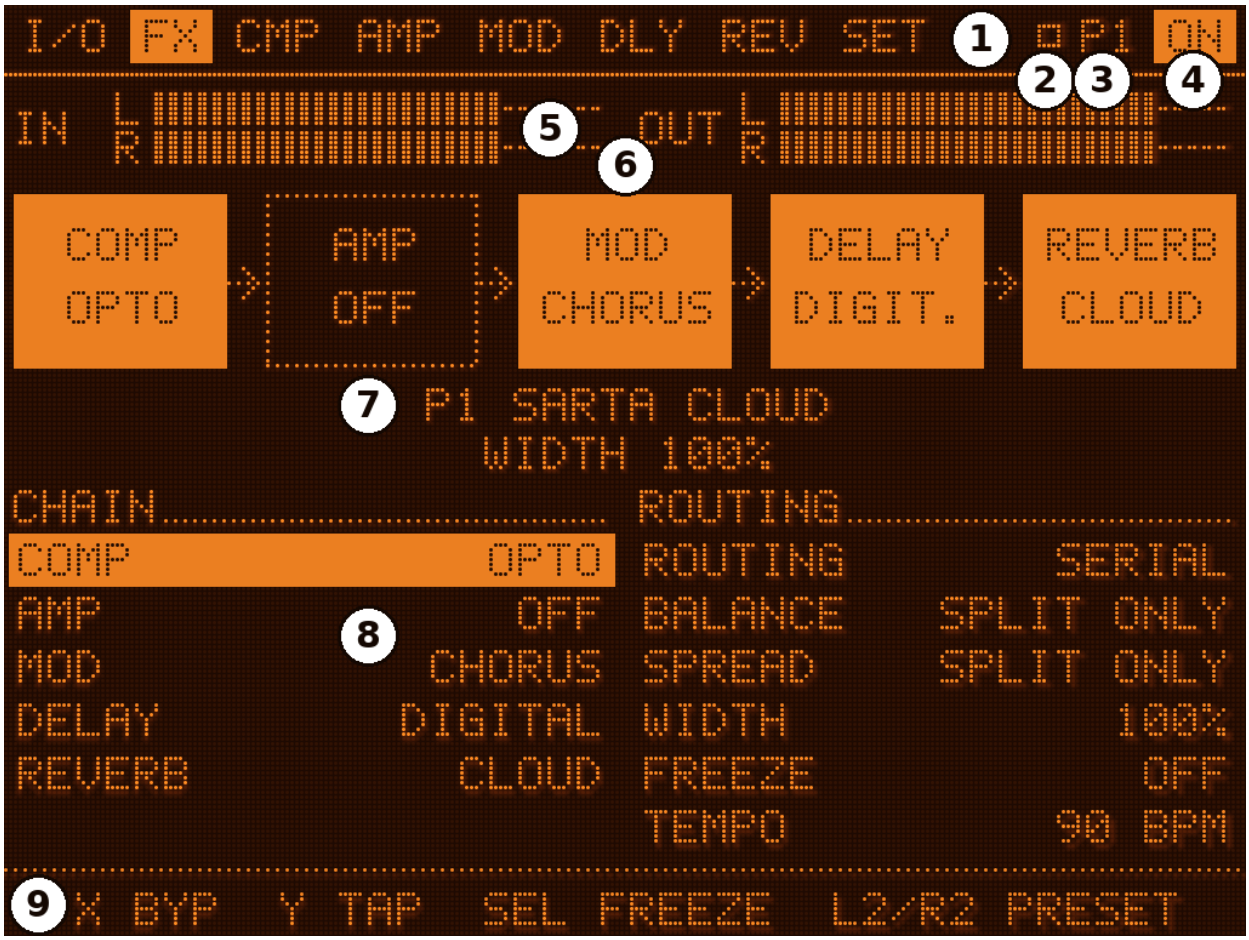
Updating

Copy the new files over the old ones. Your presets (`presets.json`) and settings (`settings.json`) are not in the zip, so they stay as they are.

First start

- Connect your USB device **before or after** you start the app: it is found by itself (the app looks every two seconds). The I/O page shows **Source: Auto USB**.
- Play something and look at the **IN** meters at the top. A USB synth can be quiet over USB: if the meters barely move, raise **Input gain** on the I/O page (+6 to +10 dB is common).
- Set the Brick's volume with its volume buttons. The app shows **VOLUME 70%** and remembers it.

The screen



The FX page, with preset 1 Sarta Cloud.

	What it is
1	The pages: I/O, FX, CMP, AMP, MOD, DLY, REV, SET. The page you are on is lit. L1 / R1 change page.
2	Tempo light. It flashes on every beat when the delay or the modulation is synced to the tempo, otherwise at the delay time.
3	The preset you are using (P1 to P16). L2 / R2 change preset.
4	**ON** = effects on, **BYP** = bypass (dry sound), **FRZ** = freeze is on.
5	Level meters: what comes in (IN) and what goes out (OUT), left and right.
6	The picture of the page. Here: the five sections in signal order. A lit box is on, a dotted box is off.
7	Preset name, then the output width (and FREEZE ON when frozen).
8	The settings. Up / down choose one (it is lit), left / right change it. A * next to a name means a MIDI knob moves it.
9	Reminder of the main buttons. Hold SELECT to see all the controls.

Quick start: your first sound

- Connect your USB synth or interface to the Brick, and the Brick's jack to your mixer.
- Start BrickAmbientFX. You are on the **FX** page with preset 1, **Sarta Cloud**.
- Play. You hear a soft compressor, a slow chorus, diffused echoes and a big cloud reverb.
- Press **R2** to hear the next preset, **L2** to go back. There are 16.
- Press **X** to compare with the dry sound (BYP), and X again to turn the effects back on.
- Hold a chord and **tap SELECT**: delay and reverb freeze, and you can play over them. Tap SELECT again to let the tail go.
- On the FX page choose **Reverb** and press **A** to try the next type, or press left / right.

Saving: presets save by themselves two seconds after you change something. START saves at once. To bring a preset back to how it came, go to SET and choose **Reset**.

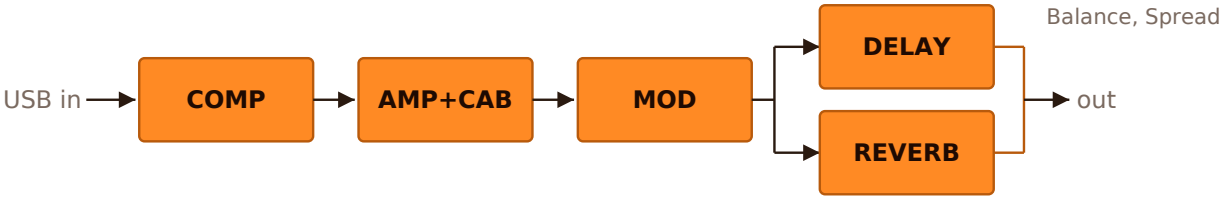
The signal chain

Every preset has five sections, always in this order. Each section has a **Type**; **Off** means it does nothing and uses no CPU.

Routing SERIAL



Routing SPLIT

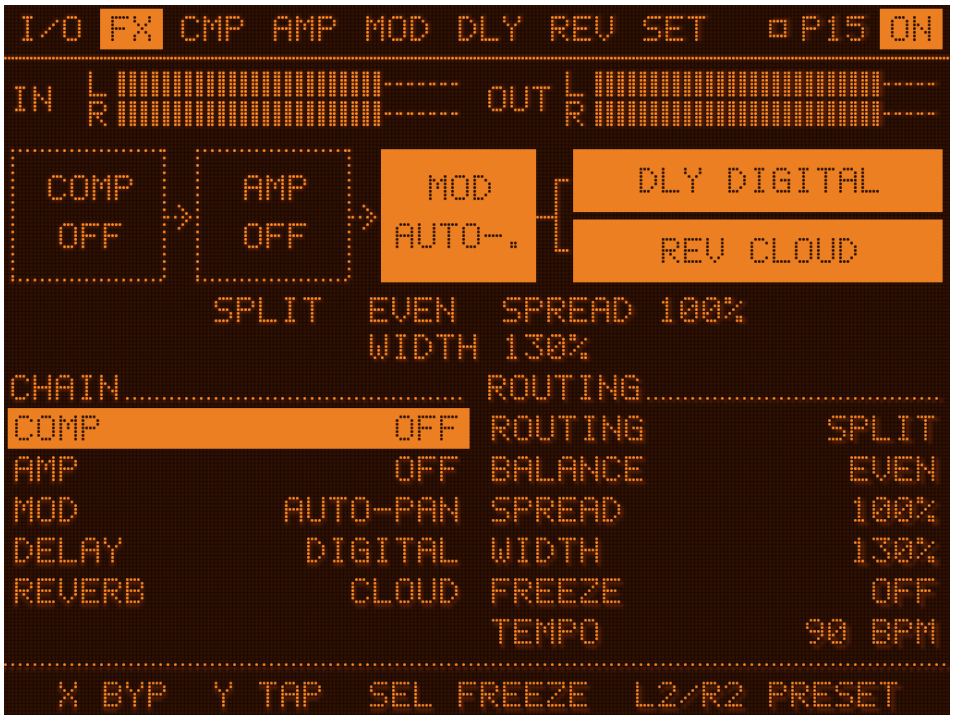


With **Serial** routing the delay goes into the reverb, as in most pedalboards. With **Split** the sound is split in two after MOD: the delay and the reverb each get the same signal, side by side, and you set how much of each you hear (Balance) and how far apart they are in the stereo picture (Spread).

Switching without clicks

You can change types, turn sections on and off, or change the routing while you play: each section fades out, changes over in silence and fades back in, in a few milliseconds. When you turn the **delay** or the **reverb** off, the echoes and the tail ring out on their own and the box on the FX page shows **TAIL** until they are gone. Turn it back on during the tail and it carries on.

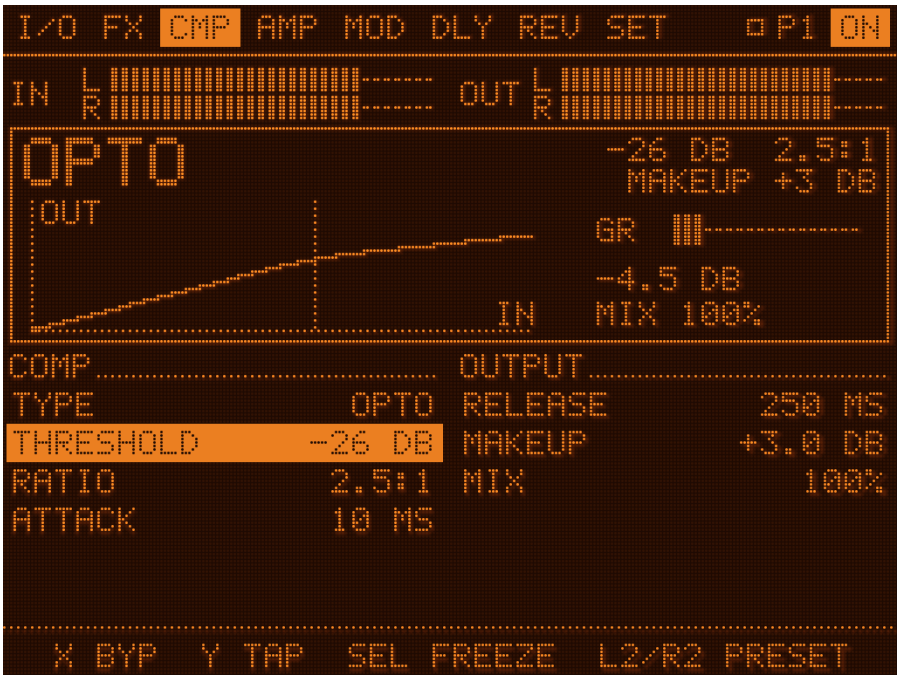
FX page: chain and routing



Preset 15 Split World: delay and reverb side by side, spread wide.

Setting	What it does
Comp, Amp, Mod, Delay, Reverb	The type of each section. A steps through the types, Off included.
Routing	**Serial**: delay into reverb. **Split**: delay and reverb side by side.
Balance	Split only. More delay or more reverb. Even = both at full level.
Spread	Split only. 0%: both in the middle. 100%: delay on the left, reverb on the right.
Width	Stereo width of the whole output. 0% = mono, 100% = as it is, 200% = extra wide.
Freeze	Delay and reverb hold what they have, for ever. Same as a tap on SELECT.
Tempo	40–300 BPM, for synced delay and modulation. Follows MIDI clock if you turn that on (SET).

CMP: compressor and swell

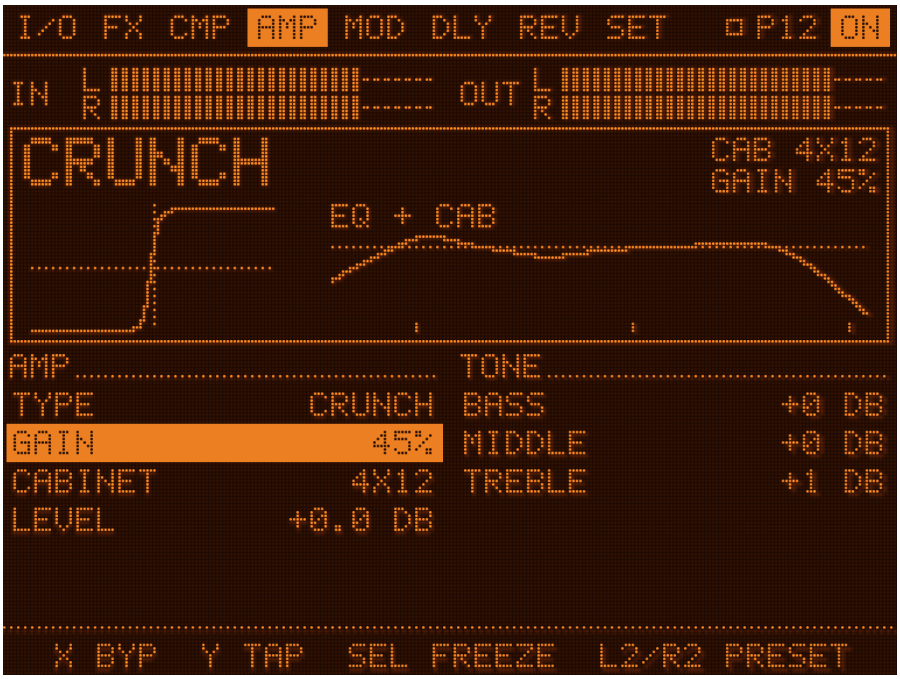


Opto compressor: the curve shows how loud signals are turned down, GR shows it live.

Type	What it is good for
Studio	A clean, general compressor.
Opto	Smooth and slow, like an old optical compressor: the harder it works, the slower it lets go.
Limiter	Stops peaks going over the threshold.
Swell	Takes away the attack: every new note fades in over the **Swell time**, like a volume pedal. **Reset** is how long the sound has to stay quiet before the next swell.

Settings: Threshold (−60 to 0 dB), Ratio (1:1 to 20:1), Attack (0.1–200 ms), Release (20 ms–3 s), Makeup (0 to +24 dB) and Mix (less than 100% blends in the uncompressed sound, also called parallel compression).

AMP: amp and cabinet

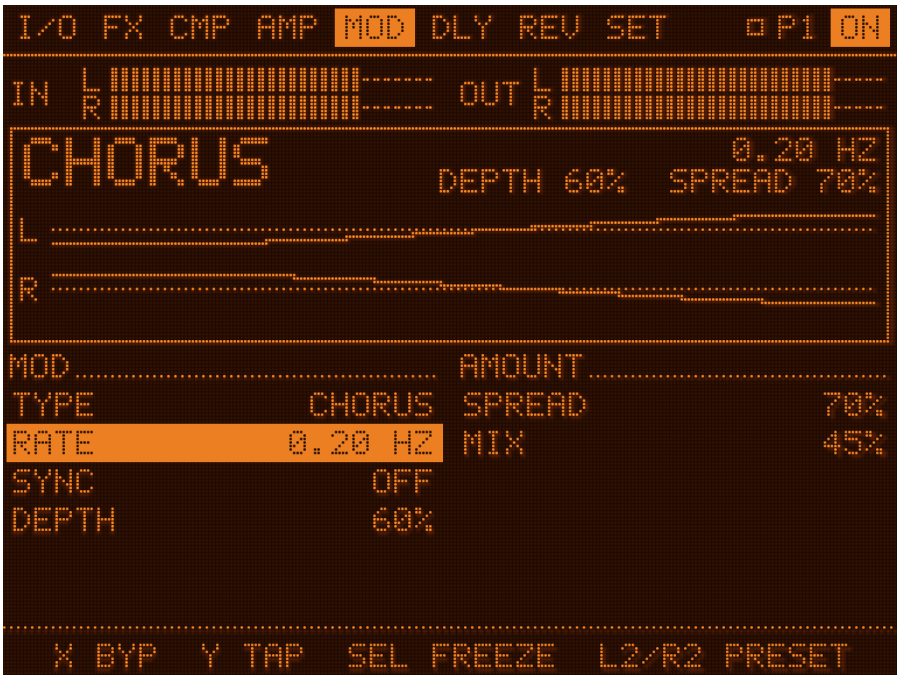


Crunch amp with a 4x12 cabinet: drive curve on the left, tone and cabinet curve on the right.

Type	Sound
Clean	Warm, just a little colour.
Crunch	Light break-up, like a small valve amp turned up.
Lead	High gain with a mid push.
Fuzz	Hard clipping, thick and buzzy.
Lo-fi	Fewer bits and a lower sample rate. Gain becomes **Crush**.

Settings: Gain, Cabinet (Off, 1x12, 2x12, 4x12, Radio), Level, and the tone controls Bass (150 Hz), Middle (750 Hz) and Treble (3.2 kHz), each ±12 dB. The cabinet takes away the harsh top of the drive; Radio is a small, narrow speaker.

MOD: modulation

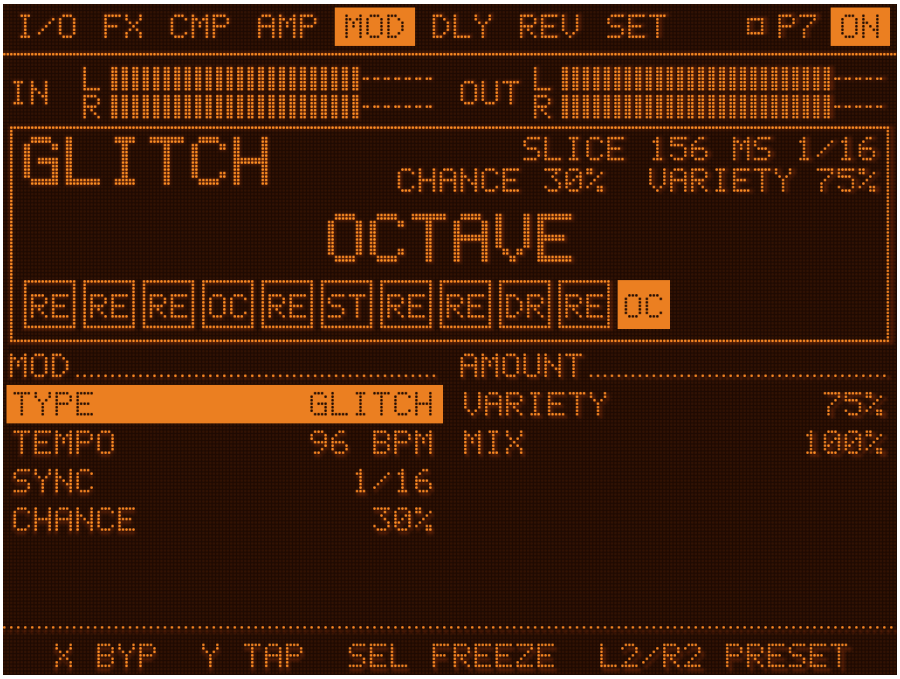


Chorus: the moving lines are the left and right modulation.

Settings: **Rate** (0.05–20 Hz) or, with **Sync**, a note value at the tempo; **Depth**; **Color**, which does something different for each type; and **Mix**.

Type	What you hear	Color is
Chorus	Three voices, wide and lush.	Spread (stereo width)
Ensemble	String machine chorus, with a fast shimmer in it.	Spread
Flanger	Jet sweep.	Feedback
Phaser	Six-stage phaser.	Feedback
Tremolo	Volume going up and down.	Shape: sine to square
Auto-pan	Sound moving left and right.	Shape
Vibrato	Pitch wobble.	Drift: random wobble, like worn tape
Glitch	Cuts the sound into slices and plays with them (next page).	Variety

Glitch



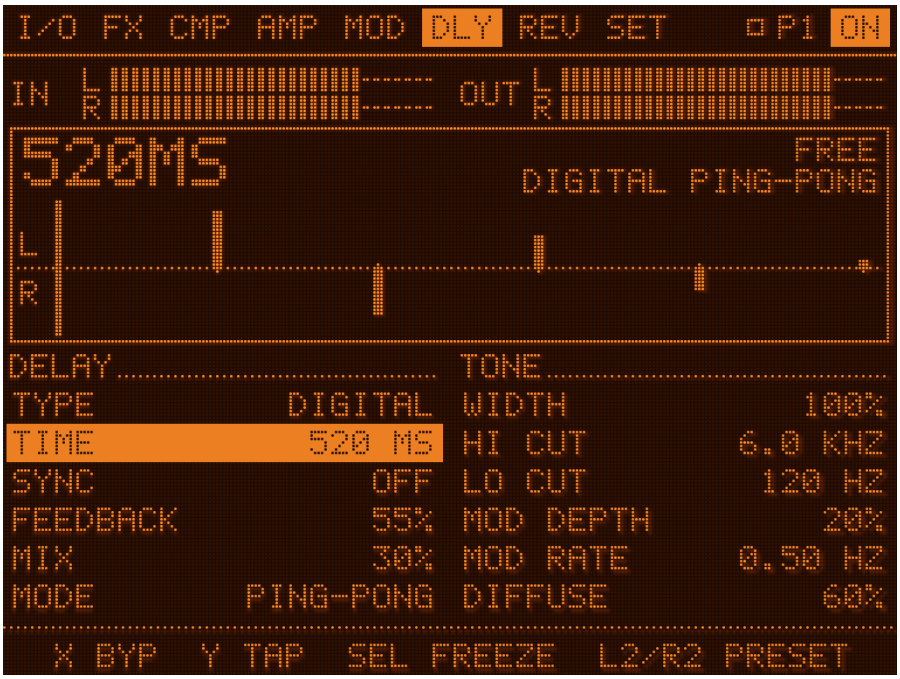
Glitch at 1/16: the event now playing, and the last events in the row below.

Glitch cuts what you play into slices. **Slices** sets how many per second, or use **Sync** for a note value (1/16 is a good start). At every slice it rolls a dice: **Chance** is how often something happens. When it does, the slice before is played again in one of these ways:

Event	On screen	What happens
Repeat	RE	The last bit is repeated (whole, half or quarter slice): stutter.
Reverse	RE	The last slice plays backwards.
Octave	OC	The last slice plays twice, an octave higher.
Stop	ST	A tape stop: the sound slows down to nothing.
Drop	DR	A short silence.

Variety decides which events can happen: low = repeats only, then reverse, octave, stop and, near 100%, drop. Mix at 100% gives the full effect.

DLY: delay

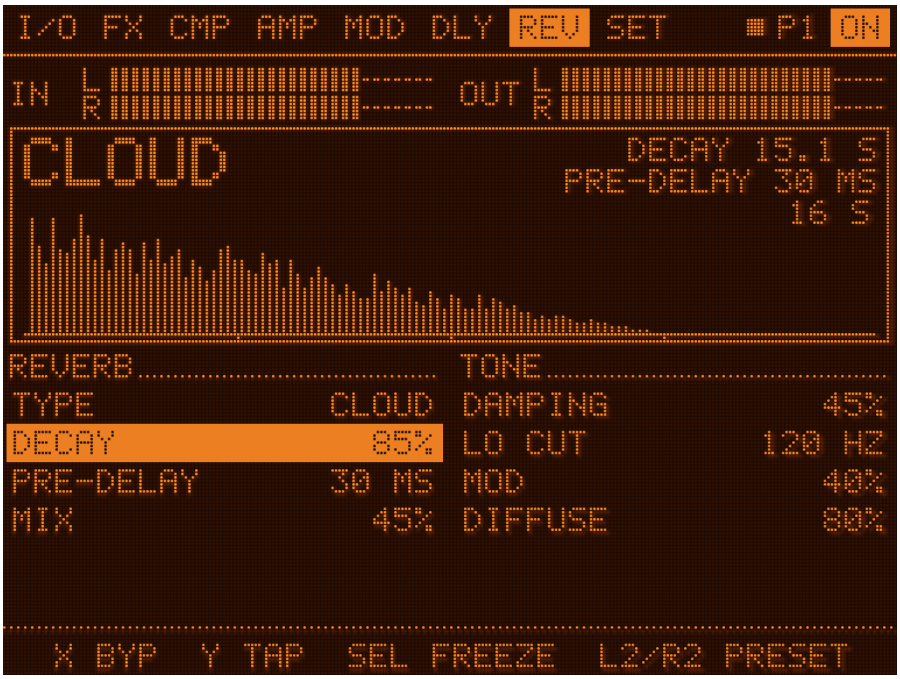


Each bar is one echo, its height is how loud it is. In ping-pong, left echoes are above the line, right ones below.

Type	What you hear	Color is
Digital	Clean echoes.	Diffuse: echoes blur into a wash
Tape	Warm echoes with wow and flutter.	Age: more wobble, darker, more saturated
Analog	Dark, soft echoes, like a bucket-brigade pedal.	Age: darker and warmer
Dual	Two delays, left and right, with different times.	R ratio: right time as 7/8, 3/4, 2/3, 1/2, 3/8, 1/3 or 1/4 of the left
Reverse	Each echo plays backwards and swells up (up to 2.6 s).	Diffuse
Shimmer	Each echo goes an octave higher.	Octave: how much goes up

Setting	What it does
Time / Sync	20 ms to 4 s, or a note value at the tempo (1/1 to 1/32, dotted and triplet). Y taps the time.
Feedback	How many echoes. Near 100% they go on and on.
Mix	Up to 50% the dry sound stays at full level; above, the dry gets quieter.
Mode	Stereo, Ping-pong (echoes bounce left and right) or Mono.
Width	Stereo width of the echoes.
Hi cut / Lo cut	Filters inside the echoes: each repeat gets darker or thinner.
Mod depth / Mod rate	Slow movement of the delay time, for a chorus-like echo.

REV: reverb



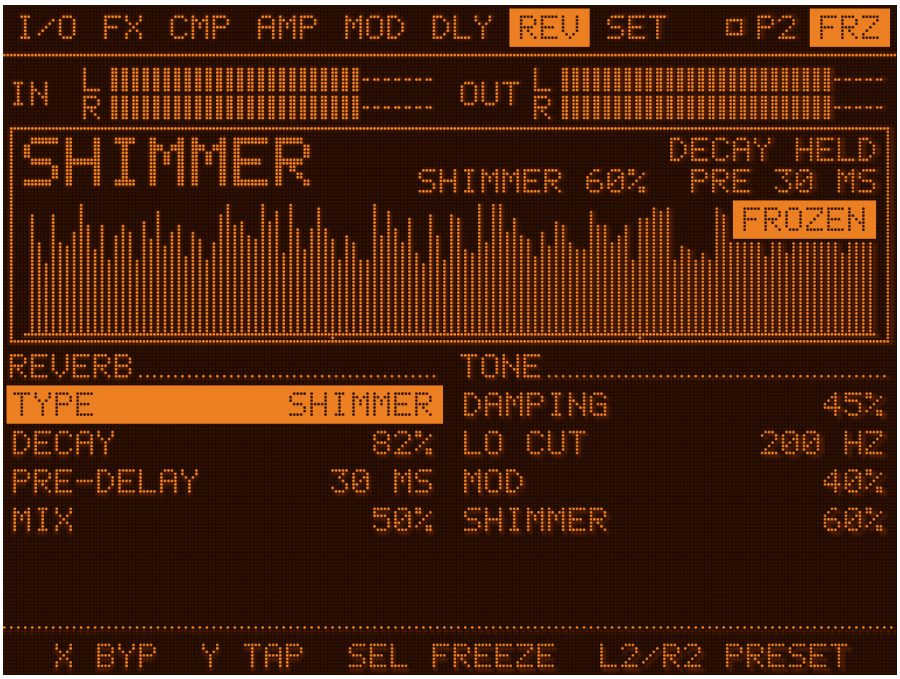
The picture shows how the reverb dies away, and the decay time.

Type	Space	Color is
Room	A small room.	Diffuse
Plate	A bright studio plate.	Diffuse
Hall	A big hall.	Diffuse
Cloud	Huge and moving, for very long washes.	Diffuse
Shimmer	A tail that climbs an octave, like an organ.	Shimmer: how much goes up
Bloom	Builds up slowly after each note.	Bloom: how slowly it builds

Settings: **Decay** (how long the tail is), **Pre-delay** (0–300 ms gap before the reverb starts), **Mix**, **Damping** (a darker tail), **Lo cut** (takes the mud out of long tails) and **Mod** (gentle movement in the tail).

Tip: for very long tails, set Lo cut to 150–300 Hz. The low end stays clean even with a decay near 100%.

Freeze, tap tempo and bypass



Frozen: the reverb holds, the header shows FRZ.

Freeze

Tap **SELECT** (keyboard: F). The delay and the reverb stop taking in new sound and keep what they have for ever, with no loss. Everything you play now goes on top, dry or through COMP, AMP and MOD. Tap SELECT again and the tail dies away naturally. Freeze is saved with the preset and can be moved with a MIDI button (see MIDI).

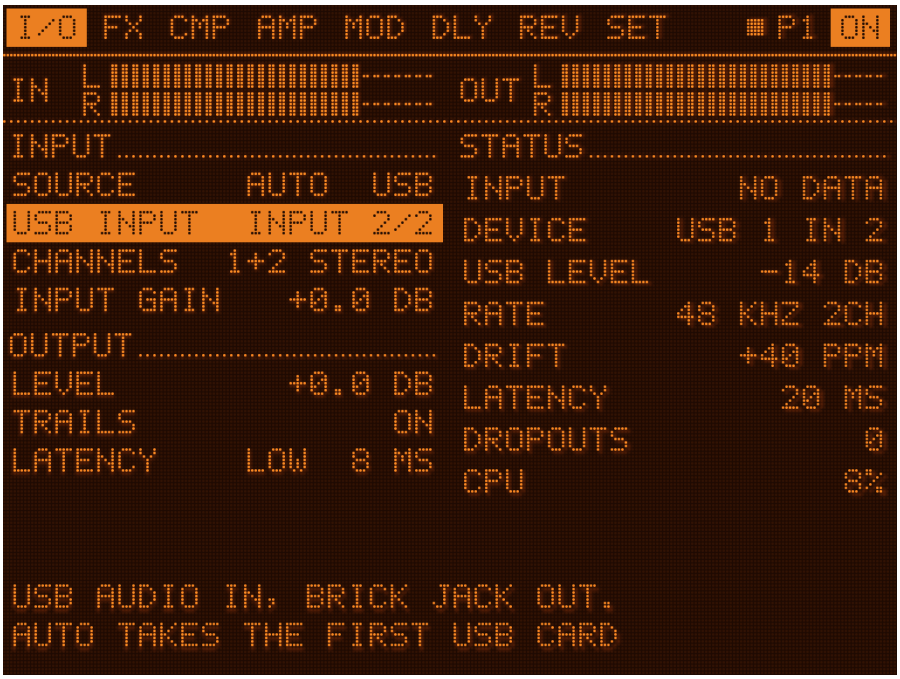
Tap tempo

Tap **Y** two or more times in time. If the delay is free, its time follows your taps. If the delay or the modulation is synced, the taps set the **Tempo**.

Bypass and trails

X turns all the effects on or off (ON / BYP). With **Trails** on (I/O page) the echoes and the reverb tail keep ringing after you bypass; with Trails off they stop at once.

I/O page

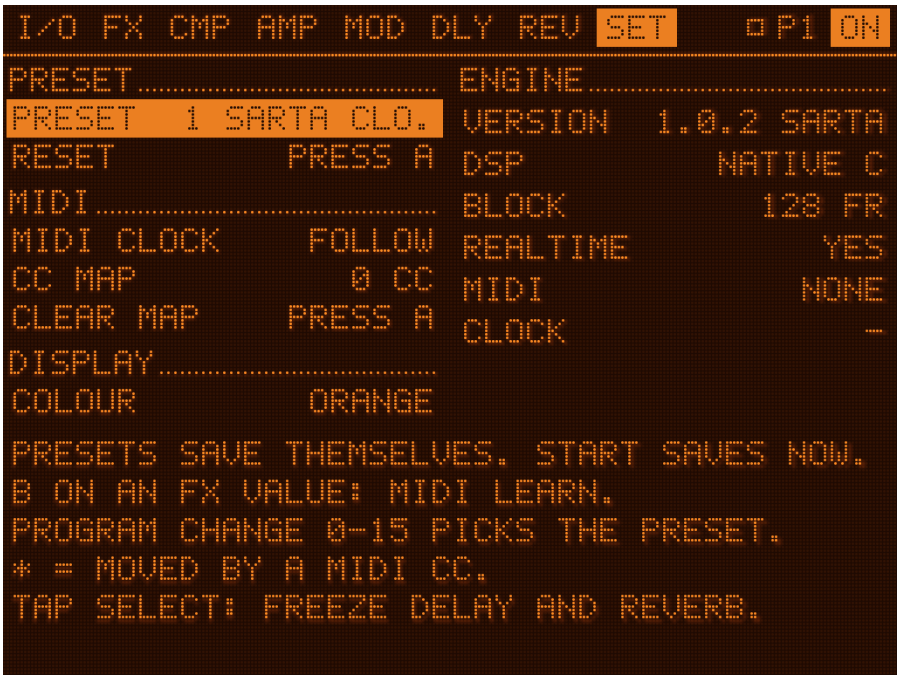


Input and output settings on the left, how the audio is doing on the right.

Setting	What it does
Source	**Auto** takes the first USB audio device it finds. With two devices you can choose USB 1 or USB 2.
USB input	Some USB adapters have more than one input on the same card (for example a mic in and a line in). Choose **Input 1, 2, 3...**: only the inputs your card has are listed, and with one input it stays on 1. The change fades out and in, no restart. Every card remembers its own input. If the record input of a card is switched off (some line inputs start off on the Brick), the app switches it on when it opens the card.
Channels	1+2 Stereo, 1 to both, 2 to both, Mono sum. Use "1 to both" for a mono synth on input 1.
Input gain	Makes the input louder or quieter (up to +12 dB).
Level	Output level of the app.
Trails	On: tails keep ringing after bypass.
Latency	Low (8 ms), Mid (16 ms), Safe (32 ms). Lower is quicker; go higher if you hear crackles.

STATUS shows **INPUT** (RUNNING when sound comes in), **DEVICE** (which USB device and input are open, for example USB 1 IN 2), the USB level, the rate, **DRIFT** (the small clock difference between your device and the Brick, corrected all the time), the total latency, **DROPOUTS** (should stay at 0) and the CPU.

SET page



Setting	What it does
Preset	Choose a preset (same as L2 / R2).
Reset	Press A: the preset goes back to how it came.
MIDI clock	Follow: synced delay and modulation follow the clock of your MIDI gear.
CC map	Press A to see which MIDI knobs move which settings.
Clear map	Press A to forget all MIDI knobs.
Colour	Screen colour: Orange, Blue, Red or Green.

Presets

16 presets. Change them as you like: they save by themselves. MIDI program change 0–15 picks preset 1–16.

#	Name	What it is
1	Sarta Cloud	Soft opto, slow chorus, diffused echoes, cloud reverb
2	Shimmer Sky	Ensemble, dotted 1/8 echoes, shimmer reverb
3	Tape Dreams	Clean amp, warbling vibrato, worn tape echo, hall
4	Swell Hall	Volume swells into reverse echoes and a long hall
5	Reverse Rain	Reverse delay on a plate
6	Bloom Pad	Ensemble and a slow blooming reverb
7	Glitch Garden	1/16 glitch, dual echoes split from a plate
8	Dual Echoes	Dual delay split from the hall, spread wide
9	Slow Jet	Slow flanger, tape echo, hall
10	Tremolo Waves	Tremolo into dark analog echoes
11	Lo-fi Radio	Lo-fi amp, radio speaker, drifting vibrato, old tape
12	Crunch Space	Crunch amp, 4x12, analog echo, hall
13	Octave Climb	Lead amp into climbing octave echoes and a cloud
14	Phase Drift	Slow phaser, diffused echoes, plate
15	Split World	Ping-pong left, cloud right, auto-pan, extra wide
16	Clean Room	Clean amp, chorus, small room

MIDI

- Connect a USB MIDI controller (or a USB synth that sends MIDI). It is found by itself.
- **Learn a knob:** on any effect page, choose a setting, press **B**, move a knob. Done: a * appears next to the setting. B again cancels.
- Every setting on FX, CMP, AMP, MOD, DLY and REV can be learned, Freeze included (choose Freeze on the FX page).
- **Program change** 0–15 chooses preset 1–16.
- **MIDI clock:** set SET > MIDI clock to Follow; synced delay and modulation then follow your tempo.

All the controls

Brick	Keyboard (PC test)	What it does
Up / Down	Arrow keys	Choose a setting
Left / Right	Arrow keys	Change it
Hold Y + Left / Right	Shift + arrows	Fine steps
A	Z or Enter	Step through a setting with options, or do an action
B	X or Esc	MIDI learn on the chosen setting
X	Space	Effects on / bypass
Tap Y	T	Tap tempo
Tap SELECT	F	Freeze on / off
Hold SELECT	Tab	Show the controls
L1 / R1	[and]	Previous / next page
L2 / R2	, and .	Previous / next preset
START	Ctrl + S	Save now
SELECT + START	Ctrl + Q	Quit
Volume buttons		Output volume

Problems and fixes

Problem	What to do
INPUT says NO INPUT	Check the USB cable. The device must be class compliant (works without drivers). Try it unplugged and plugged in again.
Only noise, or the wrong input	Your USB adapter may have more than one input (mic and line). Try the other one: I/O > USB input.
The meters barely move	Raise Input gain on the I/O page (+6 to +10 dB). Check the output level of your synth or interface.
Crackles or dropouts	Set Latency to Mid or Safe. Look at DROPOUTS on the I/O page.
Only one side has sound	Your source is mono: set Channels to "1 to both".
The sound goes on and on	Freeze is on (FRZ in the header): tap SELECT. Or the delay Feedback is near 100%.
Synced delay ignores my tempo	Set SET > MIDI clock to Follow, and make sure clock is being sent.
A button does nothing	Start **BrickAmbientFX (debug input)** from Ports: it shows the number of each button. Then fix `brickambientfx/controls.json`.
Something else	Look at `brickambientfx/log.txt` on the SD card, or write to info@brickworldhub.com.

Limits

- Input from USB only (the built-in mic is not used).
- One type per section at a time; the order of the sections is fixed.
- 48 kHz stereo. Tested on KNULLI Scarab.

Licence and credits

BrickAmbientFX is free software under the GNU General Public License v3 (or later). You can use it, share it and change it. The source is in the zip and on github.com/brickworldhub. NumPy, included in the zip, keeps its own BSD licence. Made by Alessandro Pietrosanti – BrickWorld, brickworldhub.com. Support the project on ko-fi.com/brickworld.

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