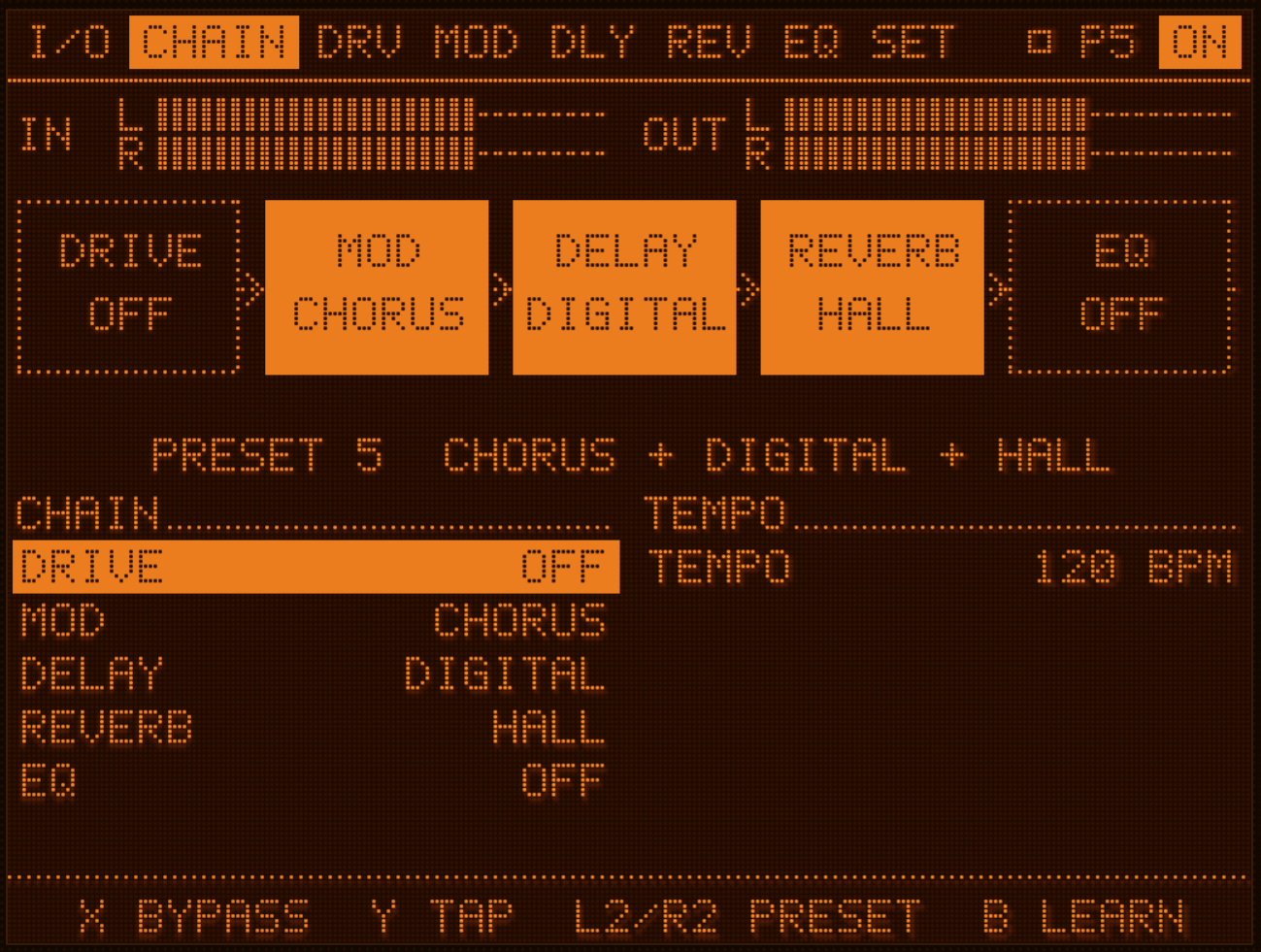
BRICKFX

A stereo multi-effect for the TrimUI Brick. Drive, modulation, delay, reverb and EQ, in one chain.



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01 What BrickFX is

BrickFX turns the TrimUI Brick into a stereo effects unit. You plug a USB audio device into the Brick (a synth, a drum machine, an audio interface), the sound goes through five effects, and comes out of the Brick's headphone jack.

```
USB AUDIO DEVICE ──USB-C──▶ BRICK ──headphone jack──▶ MIXER / INTERFACE / HEADPHONES
```

The five effects are always in this order:

```
DRIVE ▶ MOD ▶ DELAY ▶ REVERB ▶ EQ
```

Each one has a **Type**, and you use one type at a time per section, a bit like the Hologram Chroma Console. Set a section to **Off** and it's skipped.

All the audio runs in a small C engine on two real-time threads, separate from the screen, so moving around the menus never causes dropouts. BrickFX has the same dot-matrix look and the same controls as BrickSampler, but it's a separate app.

02 What you need

- A **TrimUI Brick** running **KNULLI**.

- A **USB audio device** that works without drivers ("class compliant"). Most USB synths and small audio interfaces are fine. Mono devices work too: the signal goes to both sides.
- A **USB-C cable** (or adapter) to connect it to the Brick.
- A **3.5 mm cable** from the Brick's headphone jack to your mixer, audio interface or headphones.

> **Power.** The Brick powers small bus-powered devices from its USB-C port, which drains its battery faster. Devices with their own power supply are easier on the Brick.

03 Installing

1. Download `BrickFX_v1.0.2.zip` from **brickworldhub.com** and unzip it on your computer.
2. Put the Brick's SD card in your computer.
3. Copy everything inside the `BrickFX` folder (`BrickFX.sh`, the `.keys` files and the `brickfx` folder) into `roms/ports` on the SD card.
4. Put the card back in the Brick and turn it on. BrickFX shows up under **Ports**. If it doesn't, update the game list from the KNULLI menu.

The zip also has `BrickFX (debug input).sh`. It's only for checking buttons if something doesn't respond: it shows on screen what each button sends. You can leave it out.

Updating

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

04 First start

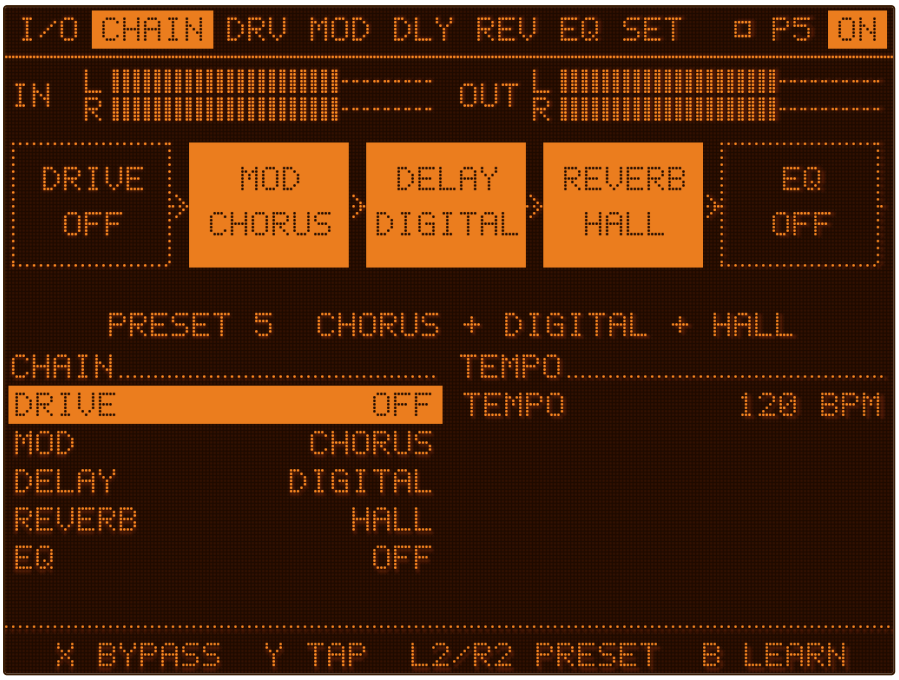
1. Connect your USB device to the Brick and turn it on.
2. Connect the headphone jack to your mixer or headphones. **Turn the volume down** first.
3. Start BrickFX from Ports. The very first time it unpacks NumPy, which takes a few seconds.
4. BrickFX opens on the **CHAIN** page with preset 1. Play something: the IN and OUT meters at the top should move.
5. Bring the level up with the Brick's volume rocker.

BrickFX finds the first USB audio device on its own. You can plug it in after starting the app too: BrickFX picks it up within a couple of seconds, and if you unplug it, it waits for it to come back.

> **No sound?** Go to the **I/O** page (L1). The status on the right tells you if the input is running, waiting for a device or getting no data. See **Troubleshooting**.

To quit, press `SELECT` + `START` together.

05 The screen and controls



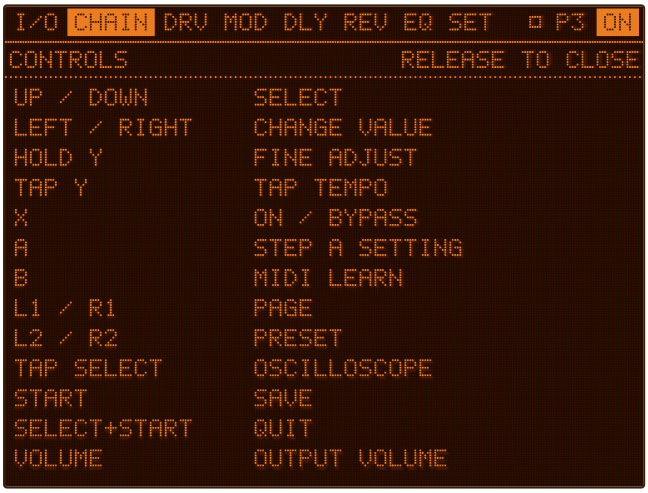
The CHAIN page. Top row: pages, preset number and ON/BYP. Below it: input and output meters.

The **top row** shows the eight pages (the current one is lit), the preset number and whether the effect is **ON** or bypassed (**BYP**). The small square next to the preset number blinks in time: on the beat when the delay is synced, otherwise at the delay time.

Under it are the **IN** and **OUT** meters, left and right. The bottom line reminds you of the main buttons.

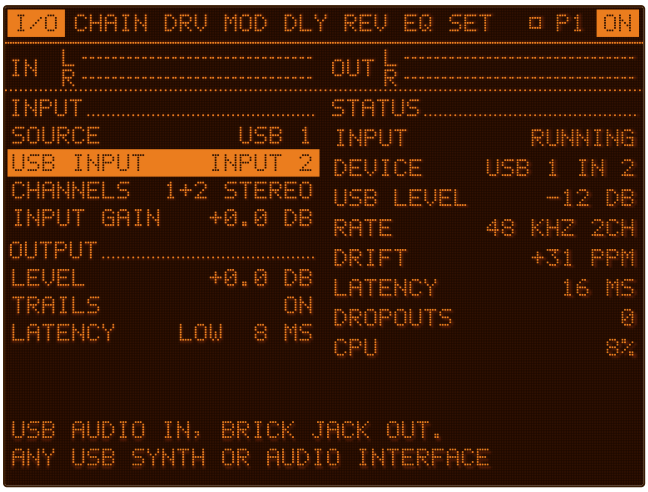
Each page has a list of settings. Move up and down to pick one (it's lit), left and right to change it.

Action	Brick	Keyboard (desktop)
Pick a setting	D-pad up / down	Up / Down
Change it	D-pad left / right	Left / Right
Fine adjust	hold Y while changing	hold Shift
Tap tempo	tap Y	T
Effect on / bypass	X	Space
Step a setting (sync, mode, type…)	A	Z / Enter
MIDI learn	B	X / Esc
Previous / next page	L1 / R1	[/]
Previous / next preset	L2 / R2	, / .
Save now	START	Ctrl+S
Oscilloscope	tap SELECT	O
Controls help	hold SELECT	hold Tab
Quit	SELECT + START	Ctrl+Q
Output volume	volume rocker	–



Hold SELECT at any time to see the controls. Let go to close.

06 I/O page



Input and output settings on the left, live status on the right.

Settings here belong to the app, not to a preset, so they stay the same when you change preset.

Setting	What it does	Range
Source	The USB input. **USB** uses the first USB audio device found. With more than one connected, left / right picks a specific one.	USB / USB n
USB input	Some USB cards have more than one input, for example an adapter with a mic in and a line in. Pick the one you use here. You can change it while playing: it fades over, no click. With only one input it stays on Input 1. Each USB device remembers its own input.	Input 1, Input 2…
Channels	How the USB channels reach the chain: both as stereo, channel 1 to both sides, channel 2 to both sides, or both mixed to mono.	1+2 Stereo, 1 to both, 2 to both, Mono sum
Input gain	Level into the chain. Turn it up for quiet devices: many USB synths send a low level.	-inf to +12 dB
Level	Output level of BrickFX, before the Brick's own volume.	-inf to +3.5 dB
Trails	On: when you bypass with X, delay and reverb ring out. Off: they stop at once.	Off / On

Latency	Size of the output buffer. Low feels most immediate; Mid and Safe are there if you hear dropouts.	Low 8 ms, Mid 16 ms, Safe 32 ms

Status

Line	Meaning
Input	**RUNNING** all fine · **WAITING** no USB audio device found · **NO DATA** the device is open but sends nothing · **STARTING** just opened
Device	Which USB card is in use, plus the input (USB 1 IN 2) when the card has more than one. USB (off) if none.
USB level	Peak level coming from the device, before Input gain.
Rate	Sample rate and number of channels of the device.
Drift	How far apart the device's clock and the Brick's clock are. BrickFX corrects it on its own; a few dozen ppm is normal.
Latency	Total delay from input to output, in ms.
Dropouts	Gaps in the sound since the start. It should stay at 0.
CPU	How busy the audio engine is. All five effects on uses well under 15%.

07 CHAIN page

The whole chain at a glance. Lit boxes are on, dotted boxes are off. Under the boxes are the preset number and its name, the type of each section and the tempo.

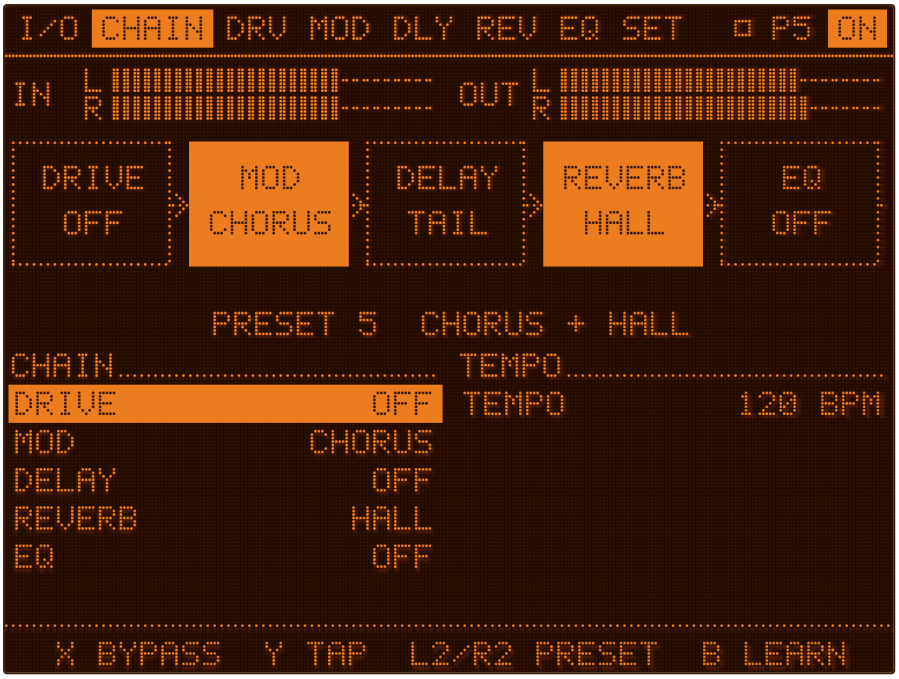
From here you can change the type of any section without going to its page: pick DRIVE, MOD, DELAY, REVERB or EQ and use left / right.

Smooth switching

Switching a section on or off, or changing its type, crossfades: the old effect fades out and the new one fades in, in 10 to 80 ms. No clicks, even while you play.

Tails

When you switch **DELAY** or **REVERB** off, only its input closes. The echoes or the reverb tail carry on and die away on their own, while the dry sound comes back at full level. The box shows **TAIL** until it's finished. Switch it back on during the tail and it carries on from there.



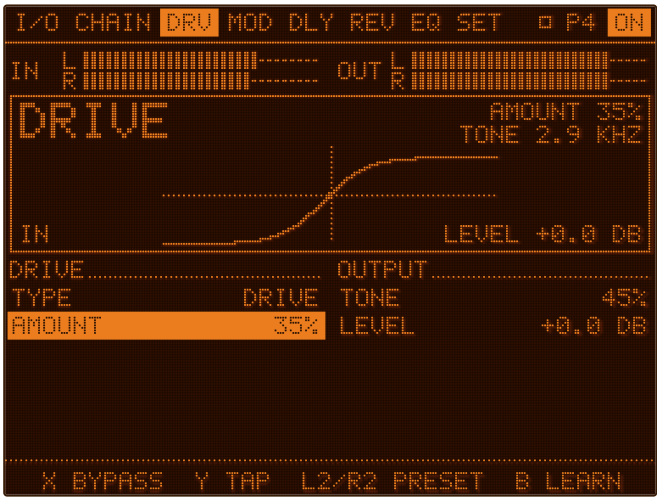
DELAY has just been switched off: the box shows TAIL while the echoes die away.

> **Bypass (X)** works on the whole chain and gives you the dry sound. With **Trails** on (I/O page) delay and reverb still ring out after you press it.

08 DRIVE

Adds dirt at the start of the chain. The picture shows the shape of the distortion curve.

- **Drive**: warm, slightly uneven, like a valve.
- **Fuzz**: hard clipping with tight lows.
- **Crush**: lowers bit depth (16 down to 4 bit) and sample rate, for a lo-fi digital sound.

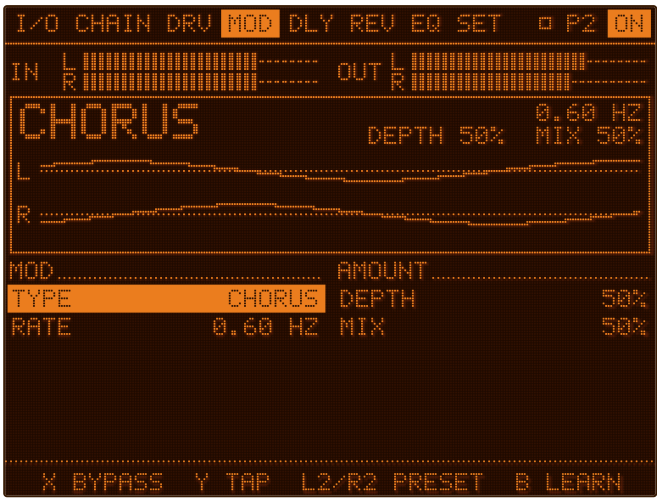


Setting	What it does	Range
Type	Off, Drive, Fuzz, Crush	–
Amount	How much distortion. Loudness stays about the same as you turn it up. With Crush it sets the bit depth.	0–100%
Tone	Dark to bright. With Crush it sets the sample rate.	0–100%
Level	Output level of the drive.	-inf to +3.5 dB

09 MOD

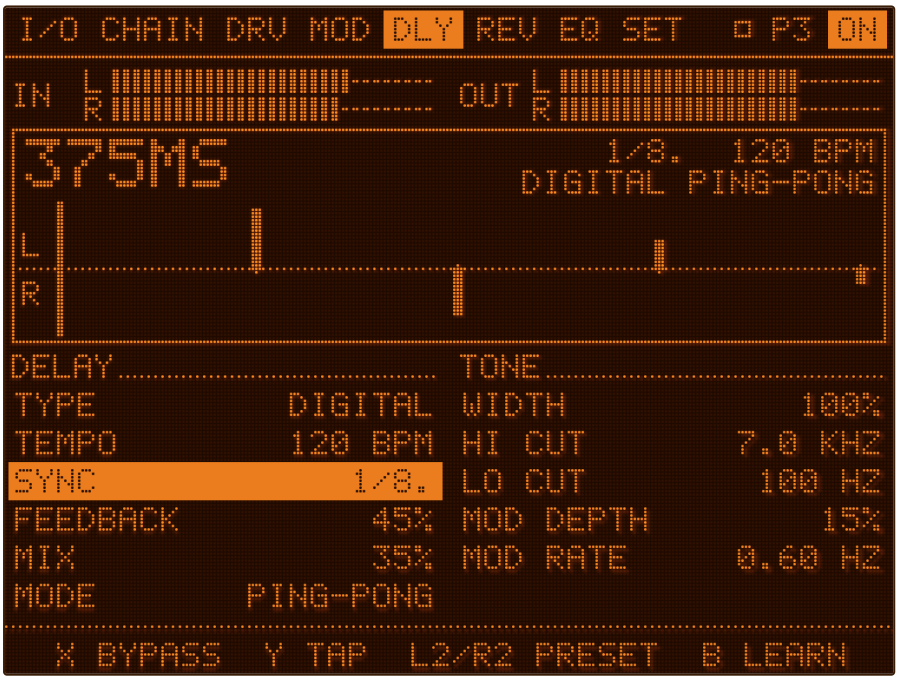
Movement and width. The picture shows the left and right LFOs. They're 90° apart (auto-pan 180°), so chorus and phaser sound wide.

- **Chorus**: thicker, wider sound.
- **Phaser**: six-stage sweep.
- **Tremolo**: volume going up and down.
- **Auto-pan**: sound moving left and right.
- **Vibrato**: pitch wobble (set Mix to 100%).



Setting	What it does	Range
Type	Off, Chorus, Phaser, Tremolo, Auto-pan, Vibrato	–
Rate	Speed of the movement.	0.05–12 Hz
Depth	How strong the movement is.	0–100%
Mix	Balance between dry and effect.	0–100%

10 DELAY



The picture shows the repeats: their timing, how they fade and where they sit left and right.

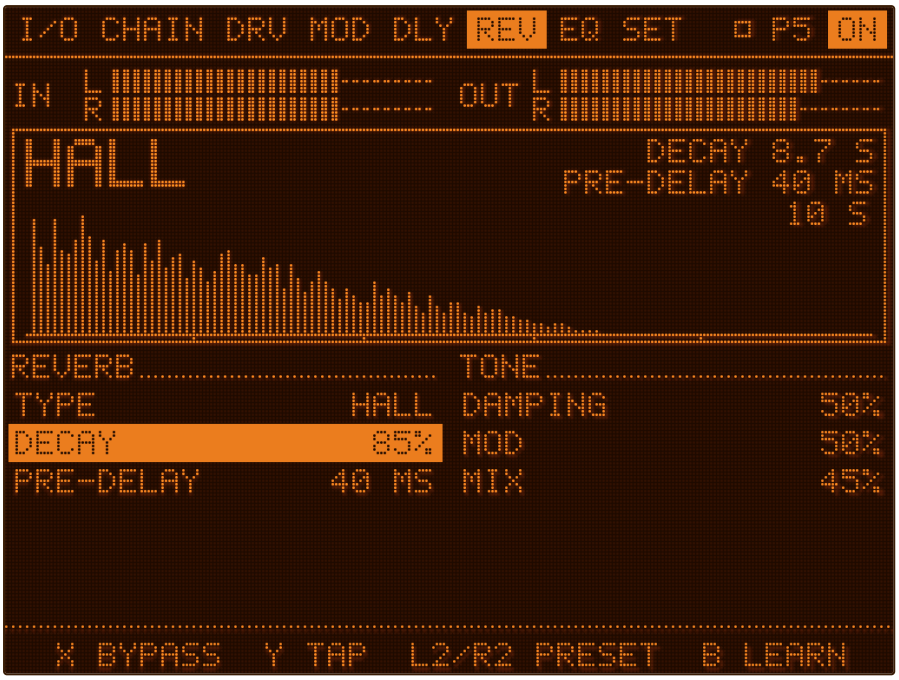
- **Digital**: clean, exact repeats.
- **Tape**: a bit of flutter, a softer top and more saturation as the repeats go on.

- **Analog**: dark, warm repeats in the style of old bucket-brigade pedals.

Setting	What it does	Range
Type	Off, Digital, Tape, Analog	–
Time	Time between repeats. Changing it glides like tape. Ignored when Sync is on.	20 ms – 2 s
Tempo	Tempo used by Sync. Also set by tap or MIDI clock.	40–300 BPM
Sync	Locks the time to a note value at the tempo. A steps through the values. Dotted (.) and triplet (T) values included.	Off, 1/1 … 1/16T
Feedback	Number of repeats. At high settings the repeats build up but are soft-limited, so they don't run away.	0–100%
Mix	Dry against echoes. At 50% both are at full level.	0–100%
Mode	Stereo: separate left and right · Ping-pong: repeats bounce side to side · Mono	–
Width	Stereo spread of the repeats.	0–100%
Hi cut	Darkens each repeat a little more.	1 kHz – Off
Lo cut	Thins each repeat a little more, keeps the low end clean.	Off – 1 kHz
Mod depth	Amount of wow on the repeats.	0–100%
Mod rate	Speed of the wow.	0.1–5 Hz

> **Tip.** Feedback near 100% with Tape or Analog gives you self-oscillating, dub-style repeats. Lower Hi cut to keep them from getting harsh.

11 REVERB

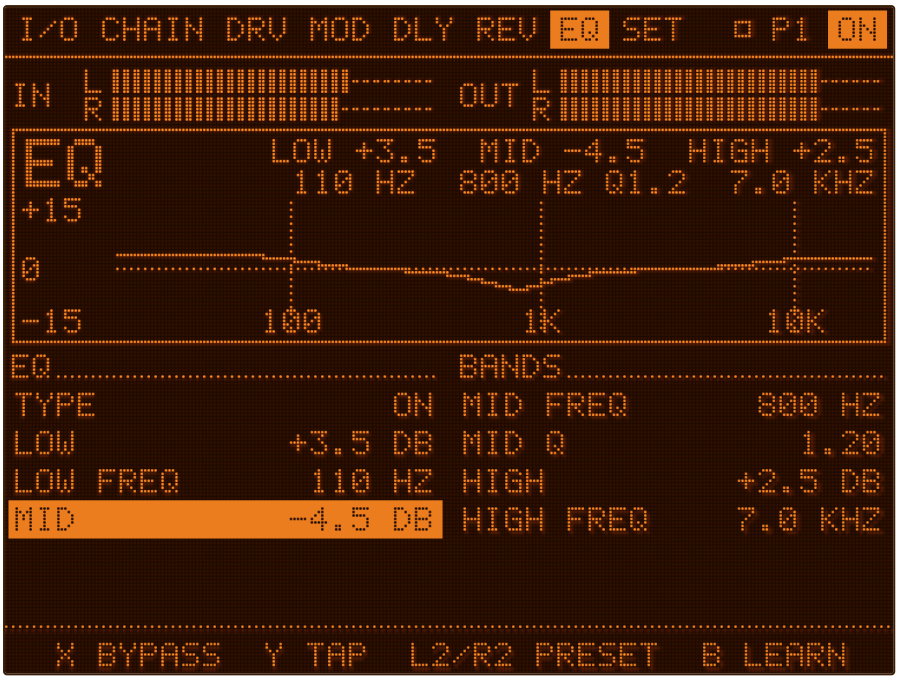


The picture shows the pre-delay gap and how long the reverb lasts.

Three spaces, all in true stereo with a slowly moving tail: **Room** (small and tight), **Plate** (bright and smooth) and **Hall** (big and long). The level into the reverb follows the type and decay, so even long tails stay just under the dry sound and never clip.

Setting	What it does	Range
Type	Off, Room, Plate, Hall	–
Decay	Length of the tail.	0–100%
Pre-delay	Gap before the reverb starts. Keeps the dry sound clear.	0–250 ms
Damping	How quickly the highs fade in the tail.	0–100%
Mod	Movement in the tail. Higher sounds lusher.	0–100%
Mix	Dry against reverb.	0–100%

12 EQ



The picture shows the response curve.

A three-band EQ at the very end of the chain, to shape the final sound.

Setting	What it does	Range
Type	Off or On	–
Low / Low freq	Low shelf: boost or cut below the frequency.	±15 dB · 30–500 Hz
Mid / Mid freq	Mid peak: boost or cut around the frequency.	±15 dB · 150 Hz – 8 kHz
Mid Q	Width of the mid band. Higher is narrower.	0.3–8
High / High freq	High shelf: boost or cut above the frequency.	±15 dB · 1.5–16 kHz

13 Presets

BrickFX has **8 presets**. Change preset with `L2` / `R2` or by MIDI program change. A preset keeps every effect setting and the tempo. Input, output and display settings belong to the app.

- Your changes **save themselves** 2 seconds after you stop editing. `START` saves at once.
- **SET › Reset** puts the current preset back to its factory sound.

#	Name	What's in it
1	PING-PONG PLATE	Digital ping-pong delay into a plate
2	CHORUS SLAP	Chorus, short tape slapback, small room
3	DOTTED HALL	Dotted 1/8 ping-pong synced to tempo, hall
4	DARK ECHO	Drive into a dark analog echo with wow
5	AMBIENT	Slow chorus, long wide delay, big hall
6	PHASE PLATE	Slow phaser into a plate
7	LO-FI	Crush, tremolo, synced mono tape echo
8	WASH	Fuzz into runaway ping-pong and a long hall

14 Tempo, tap and sync

Tap Y two or more times in time with the music:

- with Sync **Off**, the delay time becomes the gap between your taps;
- with Sync on a note value, the tapped tempo sets the delay to that note.

Holding Y doesn't tap: it's used for fine adjustment, so there's no clash.

For the delay to follow a sequencer or drum machine, set **SET › MIDI clock** to **Follow** and pick a **Sync** value. The tempo then follows the clock.

15 MIDI

BrickFX listens to any class-compliant USB MIDI device. If your synth sends MIDI over the same USB cable as its audio, that works too: one cable does both.

CC learn

1. Go to the setting you want to control (any effect setting, types included).
2. Press `B`. The value shows **LEARN...**
3. Move a knob or fader on your controller. Done.

A `*` next to a value means a CC moves it. Press B again to cancel learning. **SET › CC map** (press A) lists all assignments and **SET › Clear map** removes them all. The CC map belongs to the app, so it works with every preset.

Clock

With **MIDI clock** on **Follow**, a synced delay follows the incoming clock. See **Tempo, tap and sync**.

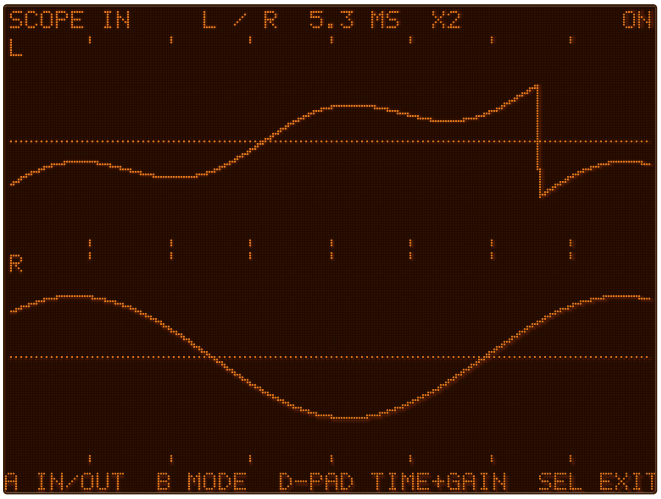
Program change

Program change 0 to 7 picks presets 1 to 8.

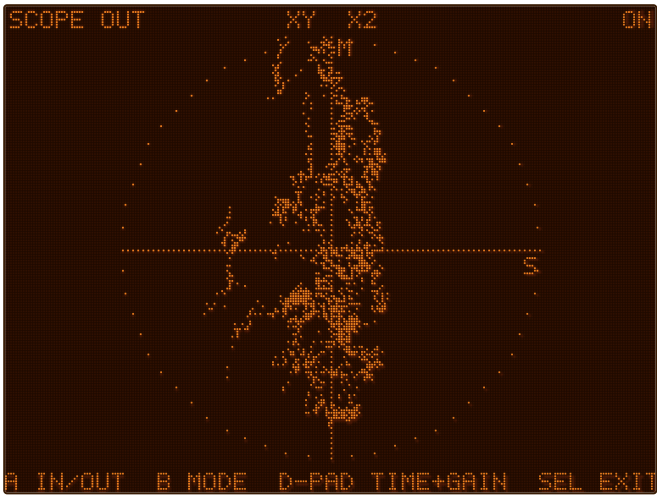
> **Tip.** Most synths send MIDI clock and program changes over USB only if you turn it on in their own MIDI settings.

16 Oscilloscope

Tap SELECT for a full-screen oscilloscope; tap it again to go back. X, Y (tap tempo) and L2 / R2 (presets) still work while it's open.



L / R lanes.



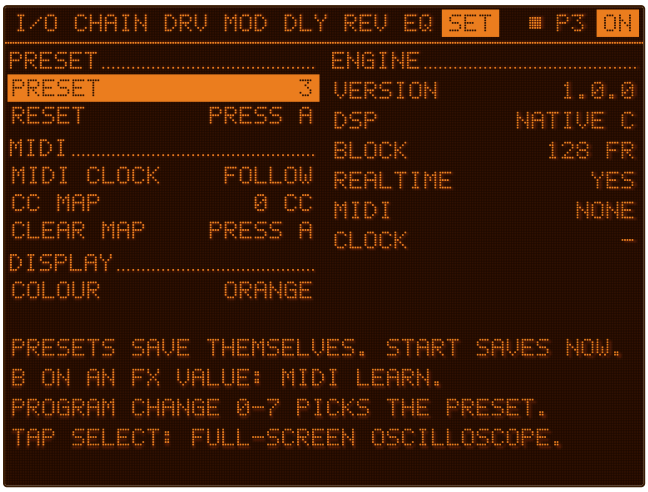
XY mode: a wide sound spreads across, a mono sound is a vertical line.

Button	What it does
A	Show the input (IN) or the output (OUT)
B	Mode: L / R lanes, both overlaid, or XY
Left / right	Time across the screen, from 1.3 ms to 85 ms
Up / down	Gain, x1 to x16
SELECT	Back to the pages

The trace locks to the start of each cycle, so a held note stands still. Try it on the input and then on the output to see what the drive or the chorus is doing to the wave.

In **XY** mode the middle (mono) part of the sound goes up and the side (stereo) part goes across, so you can see how wide your sound is.

17 SET page



Setting	What it does
Preset	Pick a preset (same as L2 / R2).
Reset	Press A: the current preset goes back to factory.
MIDI clock	Ignore or Follow.
CC map	Press A to list the CC assignments.
Clear map	Press A to remove all CC assignments.
Colour	Screen colour: Orange, Blue, Red or Green.

On the right: version and engine information, including whether the audio threads got real-time priority and which MIDI devices are connected.

18 Troubleshooting

Problem	What to try
Input: WAITING	No USB audio device found. Check the cable and that the device is on. Some devices need an adapter or a USB-C OTG cable.
Only noise, or the wrong input	If your card has a mic in and a line in, try the other one in I/O › USB input. BrickFX also switches on the card's recording controls when they're off; log.txt shows them and the input level after 2 seconds.
Input: NO DATA	The device is open but sends no audio. Unplug it and plug it back in. Check its own USB audio settings (some synths have a USB audio on/off).
Meters move, no sound	Check the Brick's volume rocker, I/O › Level and the cable at the headphone jack.
Very quiet input	Turn up I/O › Input gain. USB level shows what arrives from the device.
Clicks or dropouts	Set I/O › Latency to Mid, or Safe. Dropouts on the I/O page counts them.
Sound distorts	Lower Input gain or the drive Level. Watch the OUT meter.
A button doesn't respond	Run `BrickFX (debug input).sh` from Ports to see what each button sends.
Anything else	Look at `brickfx/log.txt` on the SD card. It says what happened at the last start (`log_previous.txt` is the one before). Send it to us with your question.

19 Files, licence, contact

Files in the brickfx folder

File	What it is
presets.json	Your eight presets
settings.json	Input (card, and the USB input of each card), output, display and CC map
log.txt	What happened at the last start
controls.json	Button mapping
native/	The C audio engine, its source and build script

Delete `presets.json` to get all factory presets back, or `settings.json` to reset the app settings.

Licence

BrickFX is free software under the **GNU General Public License version 3**. The full source is in the download: `brickfx.py` (screen, buttons, MIDI, presets) and `native/bfx.c` (the audio engine). It's also on brickworldhub.com. `vendor_numpy.zip` contains NumPy, under its own BSD licence.

Contact

Questions, bugs, ideas: **info@brickworldhub.com**
Instagram: **@brickworld_hub**
Website: **brickworldhub.com**

If BrickFX is useful to you, you can support the project on Ko-fi (link on the website).

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