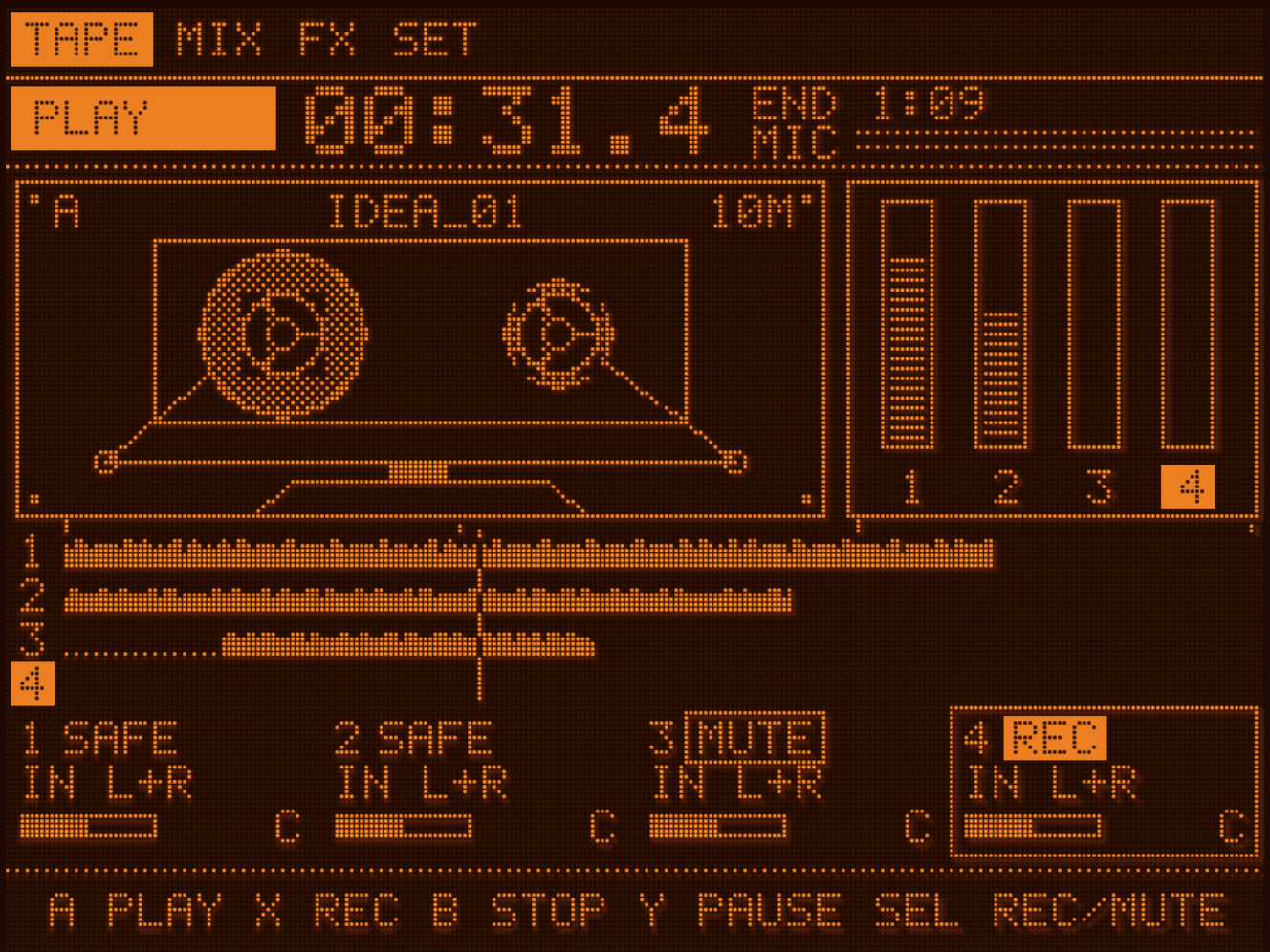
BRICKTAPE

A 4-track tape recorder for the TrimUI Brick

USER MANUAL · VERSION 1.1.3



Free and open source (GNU GPL v3). Made by Alessandro Pietrosanti.

brickworldhub.com · info@brickworldhub.com · Instagram @brickworld_hub

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1 What BrickTape is

BrickTape turns your TrimUI Brick into a small four-track recorder, like the cassette four-tracks of the 80s. You record one part, then play it back and record the next part on top, until you have a full song idea.

It is made for quick ideas: switch it on, choose your input, press record. No menus to dig through.

- 4 mono tracks on one tape, 10 minutes long
- Punch in and out, pause, undo the last take
- Rewind and fast forward with sound, so you find the spot by ear
- A cassette on the screen that winds from one reel to the other as the tape moves
- Mix page (input, volume, pan, mute for each track), effects, metronome
- Input from a USB audio interface, USB mic or synth, or the Brick's built-in mic
- Your tracks are saved as normal WAV files, ready for any computer

2 What you need

- A TrimUI Brick with **KNULLI** on the SD card (free, from knulli.org). BrickTape is tested on KNULLI Scarab.
- Something to record: the built-in mic, or a USB audio interface / USB mic / synth with USB audio (connected to the Brick's USB-C port, with an adapter if needed).
- Headphones on the Brick's headphone socket. They are best when you record with the built-in mic: you hear the other tracks while you record, and the speaker can't leak into the mic.

3 Install and update

1. Download **BrickTape_v1.1.3.zip** from brickworldhub.com and unzip it on your computer.
2. Put the Brick's SD card in your computer.
3. Copy **BrickTape.sh**, the **.keys** files and the **bricktape** folder into **roms/ports** on the SD card.
4. Put the card back in the Brick and start **BrickTape** from **Ports**. The first start takes a few seconds longer (it unpacks some files).

> **TIP** Not in the Ports list? Update the games list in the KNULLI menu.

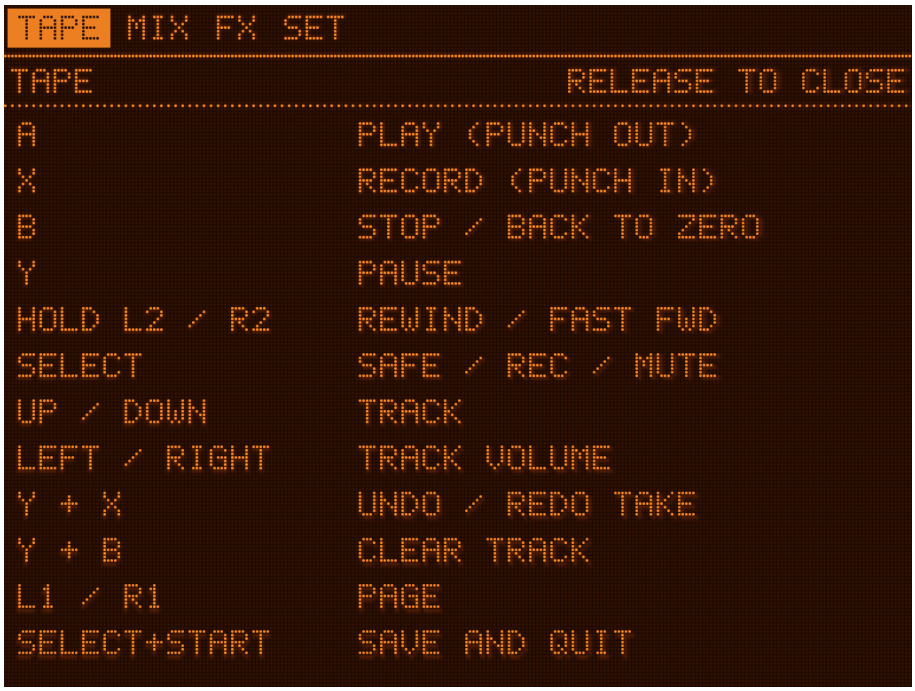
Updating: copy the new files over the old ones. Your projects and settings stay where they are.

BrickTape lives next to the other BrickWorld apps without touching them: it has its own folder and its own projects.

4 First start

1. Press **R1** three times to go to the **SET** page.
2. In **INPUT**, go to **Source** with up / down and choose your input with left / right: your USB device or **Internal mic**. Plug the USB device in first, then choose it.
3. Does your USB adapter have more than one input (for example a mic in and a line in)? Choose which one in **USB input**: Input 1, Input 2 and so on. With one input it stays on Input 1.
4. Play something and check the small input meter at the top right of the TAPE page. Too quiet or too loud? Change **Input gain**.
5. Press **L1** to go back to the **TAPE** page.

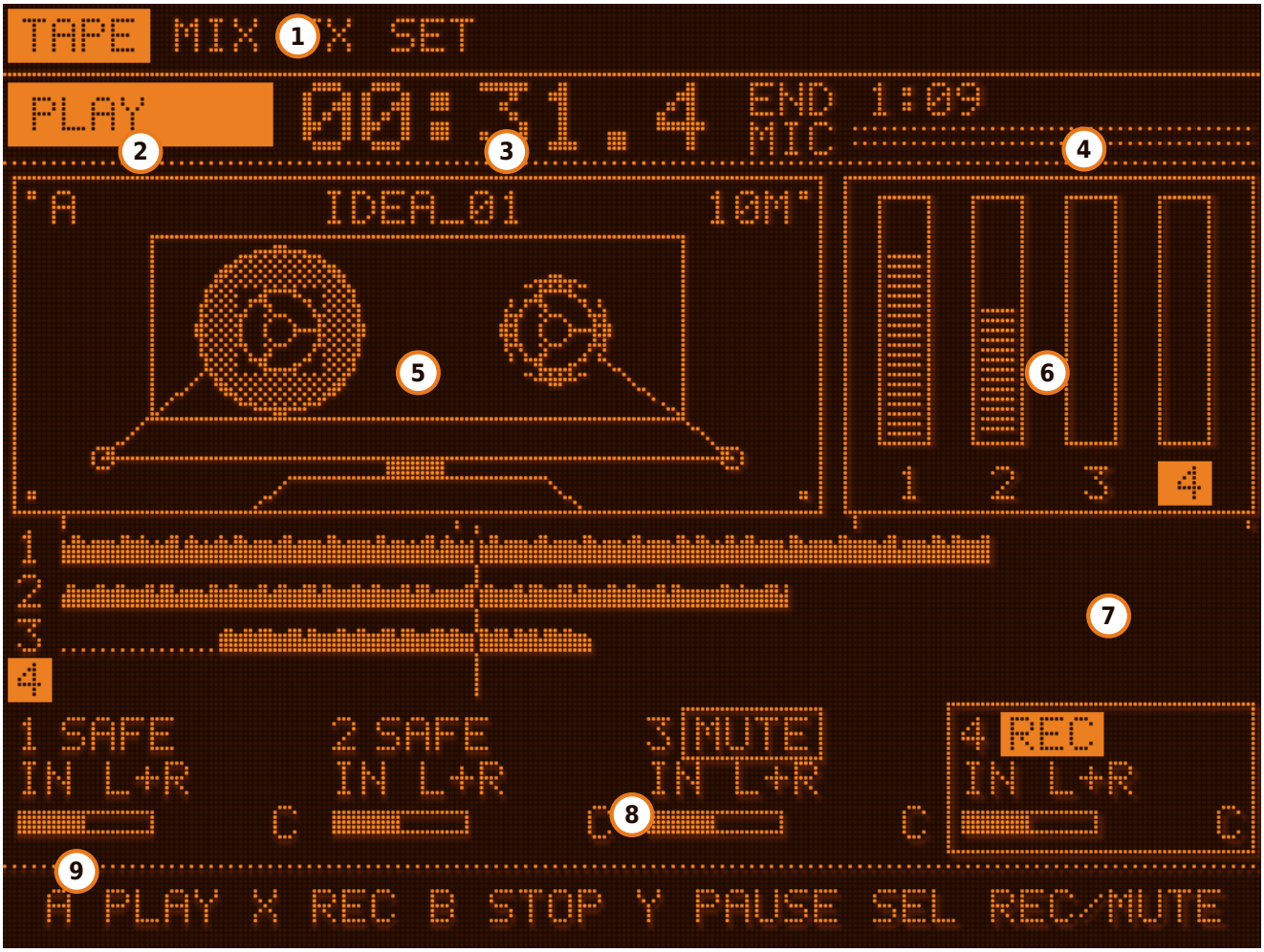
> **TIP** Hold **SELECT** on any page to see its controls. Let go to close the help.



Hold SELECT: the controls of the page you are on.

5 The TAPE page

This is the main page. Everything for recording is here.

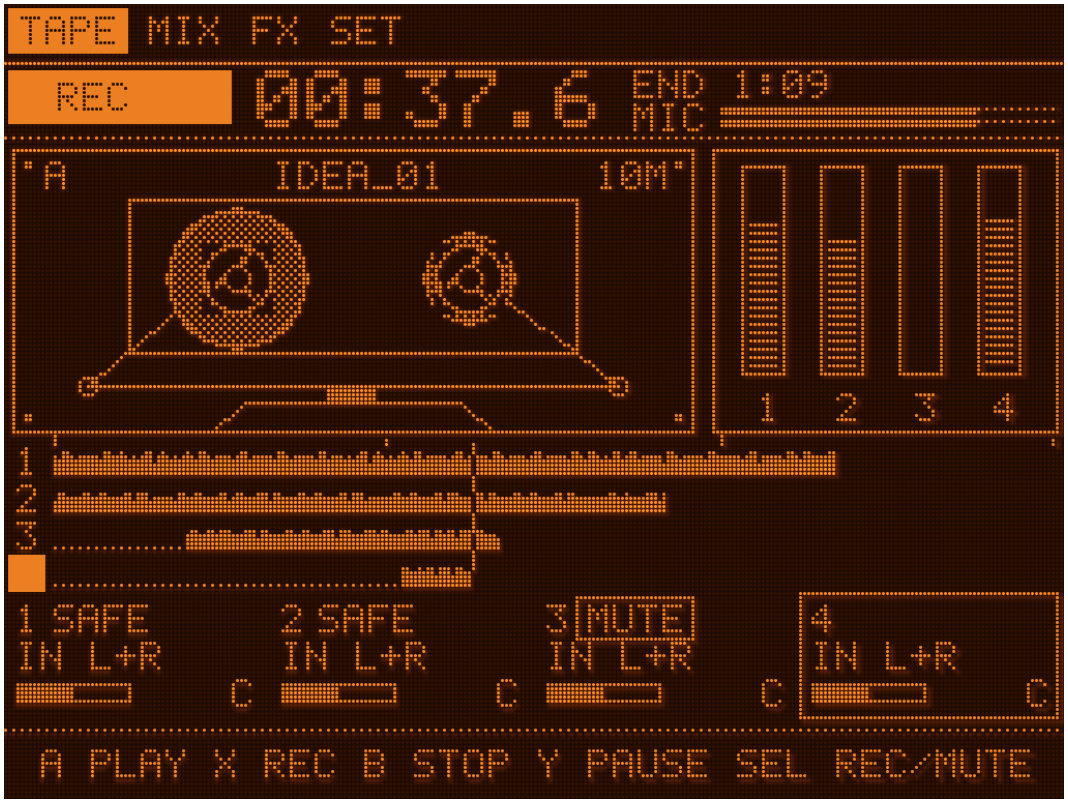


	What you see
1	The pages: TAPE, MIX, FX, SET. Change page with L1 / R1.
2	What the tape is doing: STOP, PLAY, REC, PAUSE, REWIND or F.FWD. A dot blinks while you record.
3	Where you are on the tape (minutes : seconds . tenths).
4	END: where the last recorded sound ends. Below: your input (USB n IN m = USB card n, input m; MIC; or NO USB) and its level, left and right.
5	The cassette. The reels turn while the tape plays and stand still in pause and stop. The tape moves from the left reel to the right one: at the start it is all on the left, after 5 minutes half and half, at 10 minutes all on the right.
6	Level of each track. A track set to REC shows the level of your input instead, so you can check it before you record.
7	The four tracks along the tape: where each one has sound, and a line where the tape is now. The number of the selected track is lit. Small marks on top every 30 seconds.
8	Each track: its state (SAFE, REC or MUTE), its input (L, R or L+R), its volume and its pan. The selected track has a frame.
9	A reminder of the main buttons.

6 Your first recording

1. On the TAPE page, choose track 1 with **up / down**.
2. Press **SELECT** once: the track shows **REC**. Its meter now shows your input.
3. Press **X**. The tape starts and records on track 1.
4. Play your part. When you finish, press **B**: the tape stops.
5. Press **B** again: the tape goes back to the start (00:00.0).
6. Press **A** to listen.

Next track: press **SELECT** twice on track 1 so it goes REC → MUTE → SAFE (or leave it on MUTE if you don't want to hear it). Go to track 2, press SELECT for REC, go back to zero and press X. You hear track 1 while you record track 2.



Recording on track 4 while tracks 1 and 2 play. Track 3 is muted.

TIP Set the volume of the selected track with **left / right**, right on the TAPE page.

7 Working with the tape

Track states

SELECT moves the selected track through three states:

State	What it means
SAFE	The track plays, and it can't be recorded over. Use this for parts you want to keep.
REC	The track is ready to record. When you press X, it records here. Its meter shows your input. You can set more than one track to REC to record them at the same time.
MUTE	The track is silent. It stays on the tape, you just don't hear it.

Punch in and punch out

To fix one part in the middle of a track: set the track to REC and press **A** to play a bit before the part. Press **X** at the moment you want to start recording (punch in), and **A** when you want to stop recording (punch out): the tape keeps playing. Only the bit in between is replaced. The change is smooth, with no click.

Pause

Press **Y** to pause the tape, while playing or while recording. Press Y again and it goes on from the same point. Paused while recording? It goes on recording when you press Y again.

Rewind and fast forward

Hold L2 to rewind, **hold R2** to fast forward. The tape starts slow and gets faster (up to 30 times), and you hear the tracks winding past. Let go and the tape stops right there. Great for finding a spot by ear. You can switch the sound off in SET › AUDIO › Wind sound.

Back to zero

When the tape is stopped, press **B** again to go back to the start.

Undo the last take

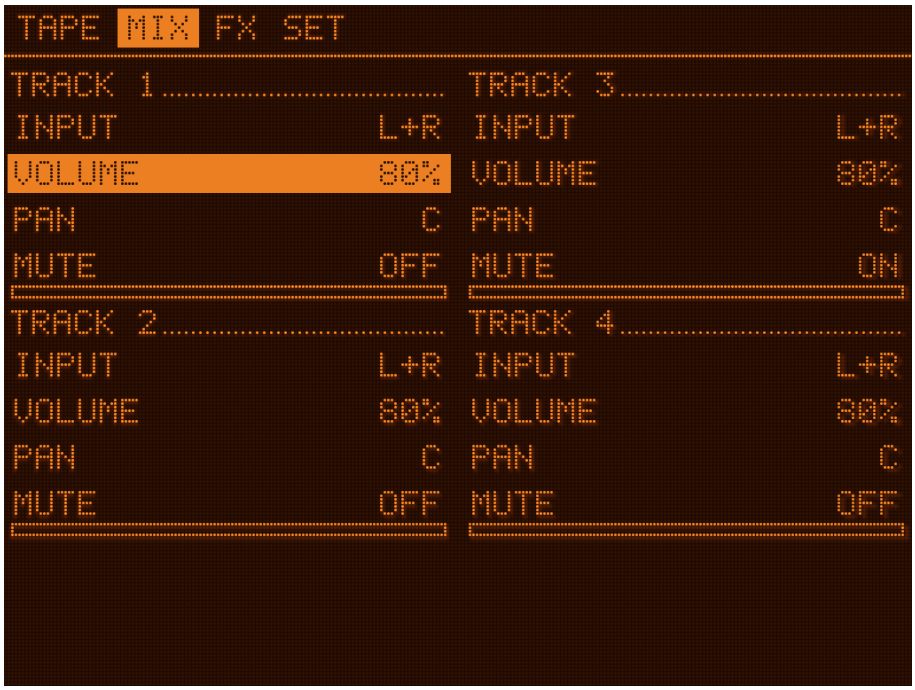
Hold **Y** and press **X** to undo the last take (on all the tracks it recorded). Do it again to bring it back (redo). Only the last take can be undone.

Clear a track

Hold **Y** and press **B** to clear the selected track. BrickTape asks first. A cleared track can't be brought back.

> **TIP** Y alone is pause; Y with X or B is undo or clear. BrickTape knows the difference: pause only happens when you let go of Y without pressing anything else.

8 The MIX page

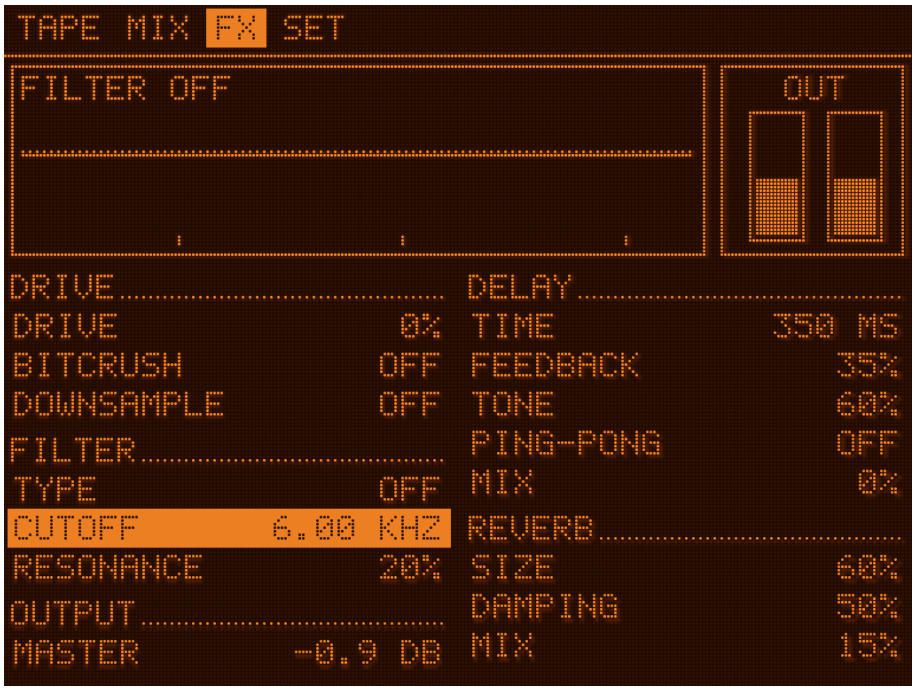


For each track:

Setting	What it does
Input	Which input the track records: **L** (left / input 1), **R** (right / input 2) or **L+R** (both together). With a two-input interface you can record a different input on two tracks at the same time, for example voice on track 1 (L) and guitar on track 2 (R).
Volume	How loud the track plays.
Pan	Where the track sits, from left to right.
Mute	On: the track is silent (the same as MUTE on the TAPE page).

Up / down choose a setting, left / right change it. Hold Y for small steps.

9 The FX page



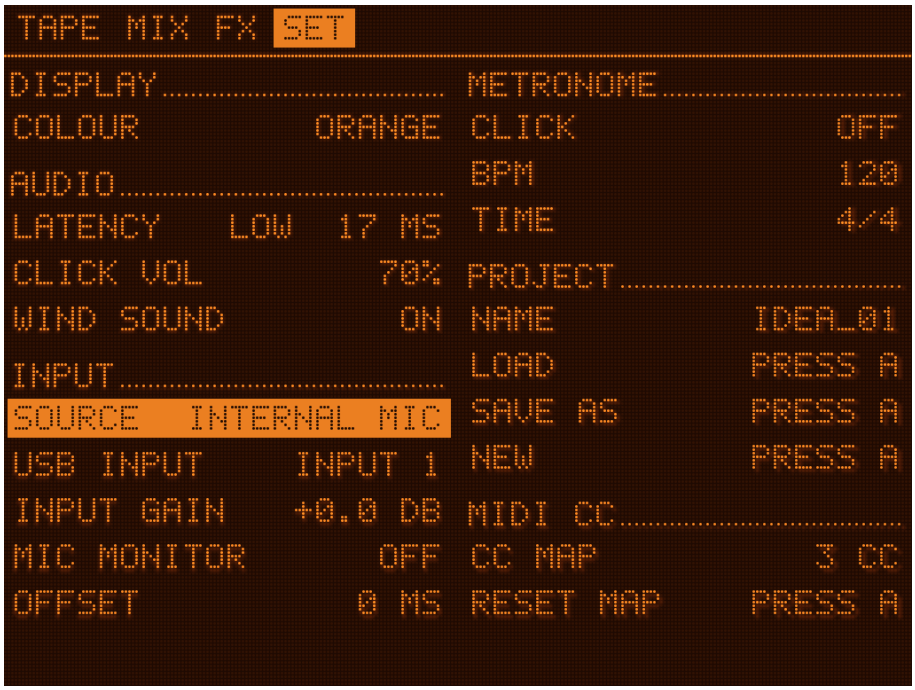
Effects on what the Brick plays: the tracks and what you hear from the input. **Recording stays clean**: the effects are never recorded on the tape.

Section	Settings
DRIVE	Drive (dirt), Bitcrush (fewer bits), Downsample (lower sample rate).
FILTER	Type (off, low-pass, high-pass, band-pass), Cutoff, Resonance.
OUTPUT	Master: the overall level.
DELAY	Time, Feedback, Tone, Ping-pong (echoes go left and right), Mix.
REVERB	Size, Damping, Mix.

Press **A** on any setting of a section to switch that section on or off (the settings are kept). Press **B** on a setting, then move a knob on your MIDI keyboard, to control it with that knob (MIDI learn).

MIDI keyboards are optional. Cutoff (CC 74), resonance (CC 71) and master (CC 7) are mapped from the start.

10 The SET page



Setting	What it does
Colour	Screen colour: orange, blue, red or green.
Latency	Low, Mid or Safe. Low is the quickest response. Use Mid or Safe if you hear clicks.
Click vol	Volume of the metronome click.
Wind sound	On: you hear the tracks while you rewind or fast forward.
Source	Your input: your USB device or Internal mic.
USB input	For USB adapters with more than one recording input (like mic in and line in): Input 1, 2... It changes with a short fade, no restart, and each adapter remembers its own. If the input is gone next time, Input 1 is used. BrickTape also switches on the adapter's recording input in its mixer (many start switched off) and uses its best format.
Input gain	Makes the input louder or quieter.
Monitor	On: you hear your USB input through the Brick while you play.
Mic monitor	Only with the built-in mic (it takes the place of Monitor). Off (default): you hear the other tracks but not the mic. On: you hear the mic too. Use headphones, or the speaker can feed back.
Offset	Fine timing of new takes, in milliseconds. If what you record comes out a little late compared with the other tracks, raise it; if it comes out early, lower it. 0 is right for most setups.
Click / BPM / Time	The metronome: on or off, tempo, and time (2/4 to 7/8). It counts from the start of the tape, plays only while the tape plays, and is never recorded.
Name / Load / Save as / New	Your projects (see section 11).
CC map / Reset map	See and remove your MIDI knob assignments, or go back to the default ones.

11 Projects and files

Each song idea is a **project**. Press **START** to save. BrickTape also saves when you quit (**SELECT + START**). In SET › PROJECT you can rename it, load another one, save a copy or start a new one.

Everything is on the SD card in **roms/ports/bricktape/projects**:

File	What it is
NAME.json	The mix, the metronome and where you left the tape.
NAME_TAPE/T1.wav … T4.wav	Your four tracks: normal WAV files (16-bit, mono). Copy them to your computer and open them in any music program to finish the song.

TIP Want a backup? Copy the projects folder to your computer now and then.

12 Limits, good to know

- **10 minutes** of tape for the whole project. At 10:00 the tape stops and shows END OF TAPE. Everything is kept in the Brick's memory while you work, so nothing is written to the SD card while you record.
- **4 mono tracks.** A stereo source recorded on one track is mixed to mono (L+R), or record L and R on two tracks.
- **Built-in mic:** you hear the other tracks while you record a new one (overdub). Use headphones. If your Brick can't play and record at the same time, BrickTape goes back to the old way: the sound stops while you record, and log.txt says why.
- Only the **last take** can be undone.
- Not in this version yet: EQ on each track, bounce (three tracks onto one), export of the final stereo mix.

13 All the controls

TAPE page

Button	What it does	PC keyboard
A	Play (while recording: punch out and keep playing)	Z or Enter
X	Record on the tracks set to REC (while playing: punch in)	Space
B	Stop. Press again when stopped: back to zero	X or Esc
Y	Pause / go on	Shift
Hold L2 / R2	Rewind / fast forward, stops when you let go	Hold , / .
SELECT	Track state: SAFE → REC → MUTE	Tab
Up / Down	Choose the track	Arrows
Left / Right	Volume of the selected track	Arrows
Y + X	Undo / redo the last take	Shift + Space
Y + B	Clear the selected track	Shift + X
L1 / R1	Change page	[/]

MIX, FX and SET pages

Button	What it does
Up / Down	Choose a setting
Left / Right	Change it (hold Y for small steps)
A	Switch / open (FX: section on or off)
B	Back. On FX: MIDI learn
L1 / R1	Change page

On every page

Button	What it does
Hold SELECT	Help: the controls of this page
START	Save the project
SELECT + START	Save and quit
Volume + / −	Output level

14 Problems and fixes

Problem	Try this
BrickTape is not in Ports	Update the games list in the KNULLI menu. Check the files are in roms/ports (not in a sub-folder).
“NO USB” at the top	Plug the USB device in, then choose it again in SET › Source. Some devices need a powered hub or a better cable.
Nothing is recorded	Is the track set to REC? Is the input meter moving? Check Source and Input gain.
Only noise or silence from a USB adapter	It may have more than one input (mic in, line in): try the other one in SET › USB input. log.txt shows the level of each channel 2 seconds after the input opens.
The take is a little late	Raise SET › Offset a few milliseconds and try again.
Clicks or drop-outs	Set SET › Latency to Mid or Safe.
No sound while recording with the mic	Look in log.txt for “full-duplex: no”: then the old way is used (sound off while recording).
Whistle or howl with the mic	Mic monitor is on and the sound comes out of the speaker: use headphones, or switch Mic monitor off.
Something else	Look in roms/ports/bricktape/**log.txt**: it says what happened. Send it to info@brickworldhub.com.

15 Licence

BrickTape is free software under the GNU General Public License v3. You can use it, share it and change it. The full source code is in the zip and at github.com/brickworldhub/brickworldhub.github.io (folder src/bricktape).

It includes NumPy (BSD licence) and the DejaVu fonts (their own free licence).

Like BrickTape? You can support the project at ko-fi.com/brickworld. Questions and ideas: info@brickworldhub.com.