



PORTATWIN

4-track cassette emulator · by Pointless Audio



WHAT IT DOES

PortaTwin models a 4-track cassette recorder released in 1987. Compact, affordable, and gloriously imperfect, it defined the sound of countless bedroom recordings. Its preamp clipped early and unabologetically, its transport wobbled, and its tape hissed. That's the point.

PortaTwin captures its full signal chain: the way the preamp colors and saturates, the wow and flutter of an aging transport, the hiss and bandwidth loss of worn tape, and the noise reduction that tried to tame it all. It works as subtle analog glue or as a full lo-fi destruction unit. Everything in between is fair game.

FORMAT VST3 · AU · CLAP (macOS Universal Binary) · VST3 · CLAP (Windows x64)

OS macOS 10.13+ · Apple Silicon + Intel · Windows 10+

PARAMS 16 automatable parameters · 15 factory presets

Introduced in 1979, the Portastudio was the first 4-track cassette recorder: it put a recording studio in a bedroom. The machine that started the family gave us Bruce Springsteen's *Nebraska* in 1982, when a record made at home was still an accident. By 1987, with the Tascam Porta Two, it was normal.

The Porta Two put a six-channel mixer, an effects send and four tracks on one cassette. It is the generation of machine behind a decade of records that were never supposed to be released: Elliott Smith's *Roman Candle* was recorded on a four-track, Iron & Wine's *The Creek Drank the Cradle* at home on a four-track cassette recorder. Those records were made on the machines, not with this plugin.

PortaTwin models one machine from that family, the 1987 four-track: preamp, tape, transport, noise reduction.

PARAMETERS

PortaTwin has sixteen controls across three sections: a preamp that colours the front end, a tape section that does most of the character, and an output stage. All of them are automatable. The panel labels a few of them the way the original deck did: TRIM is INPUT, DRIVE TYPE is CLEAN / HOT, the TAPE switch (STOP / REC) is TAPE IN, and POWER is the bypass.

PREAMP

PARAMETER	RANGE	DEFAULT	WHAT IT DOES
INPUT	0–1	0.5	Front-end gain, unity at centre — how hard you push the preamp
EQ LOW	0–1	0.5	Low shelf — add weight or trim the bottom end
EQ HIGH	0–1	0.5	High shelf — open up the top or tame it
CLEAN / HOT	toggle	CLEAN	Preamp character. Each mode keeps its own INPUT position while the plugin window is open

CLEAN — transparent gain with tone shaping and a gentle roll off the very top, the way the mixer stage colours a signal without obviously distorting it. Good for subtle work where the tape section does the heavy lifting.

HOT — the preamp overdriven. This is where the Porta Two's early, unapologetic clipping lives: push INPUT and the signal saturates, and because the tone controls sit between the drive stages, boosting the low shelf feeds the distortion directly. The harder you push, the more the EQ and the saturation colour each other.

TAPE

PARAMETER	RANGE	DEFAULT	WHAT IT DOES
DRIVE	0–1	0.0	How hot you print to tape: clean at 0, nominal level at half, +12 dB over at full — level stays put, only the saturation and squeeze grow
FLUTTER	0–1	0.0	Pitch wobble from an unsteady transport
AGE	0–1	0.0	Overall tape wear — hiss, lost highs, dropouts, extra saturation
BIAS	0–1	0.5	The deck's internal bias trim. Centre is the sweet spot; below it gets grainy and bright, above it gets darker and rounder
SPEED	toggle	3¾ips	Tape speed. The slower speed is noisier, narrower, more wow
TYPE	toggle	II	Tape formulation — Type I (ferric) or Type II (chrome)
TAPE IN	toggle	on	Switches the whole tape section in or out
DBX	toggle	off	Noise reduction — pulls the hiss down when the signal is quiet

DRIVE — how hot you print to tape, in dB rather than a volume boost: at 0 the tape barely notices, at half you sit at the deck's nominal level (just under 1 % distortion, the way a cassette sits at 0 VU), at full you are 12 dB over and the tape squeezes hard. The output level does not jump with the knob

— only the saturation, the softening of transients and the high-end compression do. It glides in smoothly when you automate it, with no zipper noise.

FLUTTER — the sound of an unsteady transport: slow wow underneath, faster flutter on top, and a slow random drift. Subtle at low settings, seasick at the top.

AGE — one knob for tape wear. The first stretch is gentle: past about 15 % the odd short dropout appears. Hiss comes in just before the middle, the top end starts to soften from around the middle of the travel (earlier at 1⅞ ips), and towards the top the saturation grows and the dropouts get deeper and more frequent — from a slightly tired tape to a badly worn one.

BIAS — the deck's internal bias trimmer, the adjustment a tech makes for a given tape. Centre is the sweet spot: cleanest, most open. Turn it down and the tape is under-biased: brighter, grainier, more distortion and a little modulation noise, with a touch less level — usable grit, not a fault. Turn it up and it is over-biased: darker with every step, smoother, slightly lower in level. Every few clicks change something; there is no dead zone and no cliff.

SPEED — the difference between the two cassette speeds. The slower speed narrows the bandwidth, lifts the hiss and deepens the wow — the classic long-record-time cassette sound.

TYPE — the tape formulation. Type I (ferric) is noisier and saturates earlier with a little low-end lift; Type II (chrome, what the real Porta Two used) is cleaner and wider.

TAPE IN — bypasses the tape section (drive, flutter, age, bias, hiss, dbx) when off, leaving just the preamp. GHOST is not part of this: it sits after the tape section and stays active either way — see the note under GHOST below.

DBX — noise reduction. It ducks the hiss when things go quiet and opens back up when the signal returns, with the faint pumping "breath" that real dbx-equipped decks had. It isn't modelled from the circuit — just tuned to feel like it.

OUTPUT

PARAMETER	RANGE	DEFAULT	WHAT IT DOES
OUTPUT	0–1	0.715	Output level — unity around three-quarters up
GHOST	0–1	0.0	Two tape artifacts in one knob — azimuth smear, then print-through echo
AUTO GAIN	toggle	off	Evens out the level changes from the preamp and tape
BYPASS	toggle	off	Full bypass

OUTPUT — a level trim rather than a fader: unity sits around three-quarters up, with room to boost above it and a mute only at the very bottom.

GHOST — two cassette artifacts on one control. The first half smears the stereo image the way a misaligned head does; past the middle it adds a faint pre-echo, the ghostly print-through you get when magnetic tape bleeds through to the next layer. At zero it's off. **It stays active even with TAPE IN switched off** — turning TAPE IN off bypasses the tape section itself, not GHOST.

AUTO GAIN — evens out the loudness changes the preamp and tape saturation introduce, so automating or A/B-ing stays level-matched. It's calibrated around a signal sitting at about –18 dBFS

— a healthy, hot-ish mix level. Feed it something much quieter and the compensation drifts, because it's reading the position of the controls rather than your actual input level; if your source is well below that, raise INPUT first rather than counting on AUTO GAIN to make up the difference.

VU meter — reads the level coming off the tape, after GHOST and before AUTO GAIN and OUTPUT: averaged rather than peak, with the lazy swing and slight overshoot of a real analog needle. Watch it for sustained level, not transient snaps. It rests at the bottom when bypassed.

FACTORY PRESETS

#	PRESET	CHARACTER
1	Init	Clean starting point — no processing
2	Classic tape	Gentle tape color, transparent
3	Bedroom 4-track	Classic lo-fi, Type I, flutter + age
4	Cassette dub	Dub-style with flutter + ghost
5	Slow burn	Degraded tape, heavy flutter, worn oxide
6	Ghost town	Maximum azimuth + print-through
7	Vocal air	HOT warmth for vocals with subtle air
8	Drum glue	Tape compression + saturation for drum bus
9	Guitar rock	HOT mode edge for electric guitar
10	Bass fat	Low shelf boost + tape saturation for bass
11	Synth mellow	Gentle filtering and warmth for synths
12	DBX squeeze	HOT + DBX compression with auto gain
13	Tape crush	Heavy tape saturation with flutter
14	Full destruction	Everything cranked — sound design
15	Service manual	The machine as its factory service manual specifies it: 1⅞ ips, Type II, reference drive, flutter and noise

User presets are saved as portable `.papreset` files (shareable between machines and projects). Browse them from the preset name in the bottom strip. **A/B comparison:** click A/B to flip between two sets of settings — the one you leave is kept, so you can tweak B and jump back to A. The two slots live while the plugin window is open; the DAW project saves only the settings you are on.

HOW IT WORKS

You don't need any of this to use PortaTwin — but if you're curious what's happening to your signal:

The preamp is the front end of the machine. CLEAN keeps it transparent and just shapes the tone; HOT overdrives it into the same early, unapologetic clipping the Porta Two's mixer stage had. Because the tone controls sit between the drive stages, pushing the low shelf feeds the distortion — so the EQ and the saturation colour each other the harder you push.

The tape does most of the work. DRIVE, BIAS, TYPE and SPEED model the magnetic side — how tape soft-limits when you hit it, how the low end blooms, how the top rolls off with speed and wear. AGE ties the wear together into one knob: hiss, lost highs and dropouts. Wow and flutter come from the transport, not the tape, so FLUTTER moves independently of AGE — a machine can have a steady transport and worn tape, or the other way round.

The noise reduction chases the hiss down when the signal is quiet and lets go when it returns, complete with the faint "breathing" that gave real dbx decks their sound.

It's a model of the whole machine rather than a chain of presets, which is why pushing it too far degrades gracefully — it saturates and falls apart like tape instead of clipping like a converter.

Ghost is not a dry/wet mix. It introduces two physical tape artifacts into the signal itself — it doesn't blend a dry copy back in. At zero, it's completely off.

Flutter and age are independent. Wow and flutter come from the transport; hiss, dropouts and lost highs come from the tape. A machine can have a perfect transport and worn-out tape, or a steady tape and a wobbly transport — so the two knobs don't track each other.

Type and speed are separate. Tape formulation and transport speed are different physical properties with different sonic effects, so they stay independent controls.

CLEAN/HOT replaces a separate drive knob. On the real Porta Two the saturation happens when you push the input, so HOT models exactly that: the harder you drive INPUT, the more it distorts.

The tone controls live inside the distortion. In HOT mode the EQ sits between the two drive stages, just as it does in the circuit, so boosting the low shelf feeds the second stage — a colour you can't get from EQ placed before or after a distortion.

Dropouts lose the highs first. On real tape the top end vanishes before the volume drops during a dropout, and PortaTwin follows that order rather than just ducking the level.

The whole chain clips softly. Nothing in the signal path hits a hard digital ceiling — it saturates and rounds over instead, so overdriving it stays musical.

INSTALLATION

MACOS

Double-click the `.pkg` installer in the download and follow it — the Customize step lets you pick VST3, AU and CLAP (for Bitwig, Reaper, MultitrackStudio). Formats install system-wide to `/Library/Audio/Plug-Ins/VST3/`, `Components/` and `CLAP/`. Restart your DAW.

Note: The installer is signed with an Apple Developer ID and notarized by Apple — macOS opens it directly, with no security warnings.

WINDOWS

Copy the `PA PortaTwin.vst3` folder to `C:\Program Files\Common Files\VST3\`.

Note: SmartScreen may warn — click "More info" → "Run anyway". Windows binary is **not Authenticode signed**.

TROUBLESHOOTING

VU meter looks sluggish on transients — by design. It has the weighted, slightly slow feel of a real VU meter: it reads average level, not peaks, so it deliberately lags sharp transients. Watch it for sustained level, not snaps — it's calibrated so 0 VU sits at a healthy mix level.

Plugin doesn't appear in DAW — most DAWs rescan plugins on launch. In Logic Pro: Preferences → Plug-In Manager → Reset & Rescan. In Ableton: Preferences → Plug-Ins → Rescan. In Reaper: Preferences → Plug-ins → VST → Re-scan.

State doesn't persist between sessions — verify your DAW saves plugin state in the project. PortaTwin uses APVTS standard, supported by every modern DAW. One exception is deliberate: POWER always comes back on when a project reopens, so a session never loads with PortaTwin silently bypassed.

Sample-accurate alignment with FLUTTER engaged — PortaTwin doesn't report a fixed plugin-delay-compensation value to the host. With FLUTTER at zero the processing delay is a handful of samples, inaudible and stable. Turn FLUTTER up and the wow-and-flutter transport modelling adds a delay that keeps drifting by design — it's the same wobble that colours the pitch — so there's no single number the plugin could report that would stay correct. If you need a track lined up sample-for-sample against a dry reference, nudge it manually rather than relying on your DAW's automatic delay compensation.

CREDITS

- Inspired by the Tascam Porta Two Ministudio (1987). Tuned by ear against a real unit.
- Brand, name and visual language: Pointless Audio, 2026.

- Built with JUCE.

SUPPORT

Bug reports, questions, feature requests: hello@pointlessaudio.studio

What to include so it gets fixed faster: <https://pointlessaudio.studio/support/>

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