POWAIR 2

USER MANUAL



SoundRadix
break free.

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Welcome

POWAIR is an intelligent loudness and dynamics processor. It combines an automatic **Leveler**, a **Compressor**, a **Maximizer**, a **Clipper / Saturator** and a **true-peak brick-wall Limiter** into a single chain, with built-in loudness-target presets for the major delivery standards (LUFS / dBTP).

Point it at a vocal, a bus, a full mix or a podcast, choose your delivery target, and POWAIR keeps levels consistent, adds glue and density where you want it, and holds your output at the ceiling.

New in POWAIR 2

- A mastering-grade **true-peak Limiter** with separate transient and sustain recovery, joined by a **Maximizer** and a refined **Clipper / Saturator**.
- **Delta Duck™**: ducking that holds the gap you set between a bed and a voice.
- An expanded **Leveler**, with noise-floor reduction, **Learn** and automation **Write / Read**.
- Built-in **loudness delivery targets**, with matching LUFS targets and true-peak ceilings.

Your POWAIR 1 presets still work, too.

How POWAIR thinks

POWAIR approaches dynamics differently from a classic compressor. A minute spent on the idea makes the rest of this manual easier to follow.

You set the result; POWAIR handles the mechanism. Where a classic compressor asks you to describe the *machine* (a threshold to cross, a ratio to apply, a release to shape), POWAIR asks for the **result you want**: the loudness to aim for (**Target Level**), how hard to compress (**Compression**, in dB), how far a bed should sit under a voice (**Target Delta**). You dial the outcome, and POWAIR continuously works out the moment-to-moment moves to hold it.

It works in loudness. Two signals can measure the same RMS level and still sound noticeably different in loudness. POWAIR responds to how loud things actually *sound*, the same way streaming and broadcast standards measure, so what you set lines up with how listeners and platforms hear your material. Its meters read in loudness (LUFS) and true-peak, matched to your delivery target.

Three stages, three jobs. The **Auto-Leveler** does the slow, big-picture ride, keeping overall level steady over seconds and minutes, like an engineer gently riding a fader. The **Compressor** shapes the fast, moment-to-moment dynamics

and character on top. The **true-peak Limiter** is the final brick wall, keeping every peak at your **Ceiling**. Splitting the work across the three keeps each one sounding natural.

Expect movement. Because POWAIR is holding a target, its gain is meant to keep moving gently as it adapts to the program. That movement is normal.

Coming from a classic compressor?

When you'd reach for…	POWAIR gives you…
A threshold + ratio to catch peaks	One **Compression** amount, in dB, for how hard to compress, with **Adaptive Compression** to have it follow the material's dynamics
Riding a fader to keep levels even	The **Auto-Leveler**, riding toward your **Target Level** for you
Makeup gain after compressing	**Auto Gain Compensation** that holds perceived loudness for you
A release knob	**Recovery**, optionally locked to the host tempo
A slow attack to protect transients	A fast Attack for control, **plus Punch** to keep the snap
A fixed-dB ducker under a voice	**Delta Duck™ (D-Duck)**, holding a steady loudness gap under the key
A peak meter	Loudness (LUFS) + true-peak meters, matched to delivery targets

Seeing what it's doing

The interface shows what each stage is doing:

- The **input meter's Leveler strip** glows **warm** when the Leveler lifts a quiet part and **cool** when it eases a loud one.
- **Gain-reduction meters** around the Compression knob and beside the Limiter show how hard each stage is working.
- The **output-vs-input delta** bar shows whether POWAIR is making the signal louder or quieter overall (it rests at center at unity gain).
- The **scrolling history display** plots it all over time, so you can follow a whole phrase, verse or scene.

Full details are in **Metering** (§15).

1. Formats & requirements

- **Formats:** AU · VST3 · AAX.
- **Channels:** mono or stereo main bus, with an optional side-chain input.
- **Precision:** double-precision (64-bit) processing throughout, with true 64-bit host input/output.
- **Platforms:** macOS and Windows.

POWAIR works on tracks, buses, and the master/output: anywhere you'd reach for a leveler, compressor, or limiter.

2. Installation & first launch

1. **Run the installer** for your platform (macOS `.pkg` or Windows `.exe`) and follow the prompts. It installs the AU, VST3 and AAX components into the standard plugin folders.
2. **Activate** your license. If you're unsure how, check your purchase confirmation email or contact support.
3. **Rescan plugins** in your DAW if POWAIR hasn't appeared yet (most hosts rescan on launch; some have a manual "rescan" button in their plugin manager).
4. **Insert POWAIR** on a track, bus or the master and open its editor.

On a **brand-new instance**, POWAIR opens on its hero preset, *"You've Got The POWAIR 2"*, so you hear it doing something right away. Reopened sessions always restore exactly the state you saved.

Reinstalling / updating: let the installer replace the previous version.

3. Quick start

The quickest route to a loud, consistent result that meets your delivery spec:

1. **Insert POWAIR** on the source you want to control (a vocal, a bus, or the master).
2. **Pick your delivery target** from the loudness-target menu on the bottom bar (e.g. *Spotify Normal*, *EBU R128*, *Podcast Stereo*). This sets both the **Target Level (LUFS)** and the **Limiter Ceiling (dBTP)** for you.
3. **Press Learn** and let about 15 seconds of representative audio play. POWAIR analyzes the program and sets the Leveler up automatically.

4. **Play the loudest section** and check the meters. The **Integrated LUFS** readout should settle near your target, and **True Peak** should stay under the ceiling. Nudge **Output** to taste.

From here you can refine the Leveler, add compression or saturation, and fine-tune the limiter. The sections below cover each in detail.

4. The interface

POWAIR's window is organized into a header, a large central display, side meters, section panels, and a bottom bar.

Header (top)

- **Preset bar**: the current preset name (the "preset pill"), with a three-dot menu on the left (save / load / manage) and **prev/next arrows** on the right to step through presets.
- **A/B + copy**: compare two full settings snapshots; the copy arrow pushes the active slot into the other.
- **Undo / redo**: also available via **Cmd/Ctrl-Z** and **Cmd/Ctrl-Shift-Z**.
- **About**: click the **POWAIR logo** to see the exact build version (handy to quote when reporting something), with a link to soundradix.com.

Central display

A large, scrolling **history display** shows what POWAIR is doing over time (input level, true-peak history, gain reduction, and the Leveler's action), with the **loudness readouts** across its top (see §15). You can **drag the on-screen handles** (Target, thresholds) directly to set values; they move in steps of **0.1 per pixel** (the side-chain's Threshold handle follows the cursor instead), and a **double-click** (or **Alt/Option-click**) resets a handle to its default.

Side meters

- **Left:** input meter (with the Leveler-action overlay).
- **Right:** output meter, with the output-vs-input loudness delta.
- **I/O gain knobs** sit at the **bottom of each meter strip**: **Input** at bottom-left, **Output** at bottom-right.

Bottom bar

- **Section tabs (pills)** select which panel is shown in the lower area: *Leveler, Compressor, Limiter, Side Chain*. The power icon at each tab's left end switches that section on or off, and a small activity LED sits at its right end.
- **Learn**: the one-click Leveler setup (see §8).
- **Loudness-target selector**: choose a delivery standard (see §16).

- **Settings cog**: **Lookahead**, **2× Oversampling**, **peak-hold time**, and the global preferences **meter mode** (Neutral / Spectral), **display-window length** and **UI Scale** (see §18).

Editing a value directly

Click any numeric readout (or a display flag) to type a value. Type the number alone, press **Return** (or click away) to commit, **Esc** to cancel. Typed edits are undoable. For controls whose range is all negative, typing a plain positive number is treated as negative (e.g. typing 3 on Ceiling → −3 dBTP).

5. The signal chain

Audio flows through POWAIR's stages in this fixed order:

Input → Auto-Leveler → Compressor → Maximizer → Clipper / Saturator → True-peak Limiter → Output

- The **Auto-Leveler** rides the level toward your target first, so everything downstream sees a consistent input.
- The **Compressor** shapes dynamics and adds glue.
- The **Maximizer** drives level into the clipper and limiter.
- The **Clipper / Saturator** adds density and tone.
- The **true-peak Limiter** is the final safety net: everything leaves it at or under the ceiling.
- **Output** is applied **last**, after the limiter, so it's your true final level. Your Output setting always defines the final level, whether the Limiter is on or off, so Output above 0 dB takes the peaks over the ceiling.

6. Input & Output

Control	Range	Default	What it does
Bypass *(host only)*	Off / Bypass	Off	Full plugin bypass, set from your host's parameter list or an automation lane. The POWAIR logo in the header dims while it's on.
Input Trim	−24 … +24 dB	0 dB	Level into the chain. In *Classic* side-chain mode it trims the side-chain key instead of the main input.
Output	−60 … +12 dB	0 dB	Final output level, applied **after** the limiter.

Control	Range	Default	What it does
Dry/Wet	0 … 100 %	100 %	Parallel compression: blends the compressor's input back in with its output. Only the compressor is blended; every later stage runs on the blend.
Stereo Link	0 … 100 %	100 %	How tightly the compressor links its action on the two channels. The Leveler always rides both channels together.
Mid/Side	L/R · M/S	L/R	Compress in the left/right or mid/side domain.

Tip: set **Input Trim** so the Leveler and compressor have a healthy signal to work with, and use **Output** to hit your final delivery level. Output comes after the limiter, so it sets the level that the output meter shows and your DAW receives.

7. The Auto-Leveler

The Leveler is the core of POWAIR. It continuously rides your level toward a **Target Level**, so quiet passages come up and loud passages come down smoothly, with a natural feel. It suits dialogue, vocals, podcasts and streams, and keeps a playlist or program consistent.

Target Level is set in **LUFS**, the same loudness scale as the readouts above the display and the delivery presets on the bottom bar. The Leveler hears loudness the way those meters do, on the timescale you set with **Integration Time**, so it is already riding while the Integrated number is still settling.

Control	Range	Default	What it does
Auto Leveler On/ Off	Off / On	On	Enables the Leveler.
Target Level	−57 … 0 LUFS	−14 LUFS	The loudness the Leveler aims for.
Range (up)	0 … 20 dB	12 dB	Maximum amount it will *boost* quiet material.

Control	Range	Default	What it does
Range (down)	0 … 20 dB	12 dB	Maximum amount it will *cut* loud material.
Link	Unlinked / Linked	Unlinked	Couples the up/down ranges and response times together.
Integration Time (up)	50 … 5000 ms	400 ms	How quickly it responds when boosting.
Integration Time (down)	50 … 5000 ms	400 ms	How quickly it responds when cutting.
NF Threshold	−60 … 0 LUFS	−40 LUFS	The level below which audio is treated as background/ silence.
Noise Floor Mode	Off · Soft · Hold	Soft	How the Leveler behaves below the floor (see below).
NF Atten.	−40 … 0 dB	0 dB	Extra attenuation applied below the floor (*Soft* mode only).

Tip on the ranges: the ranges set how far the Leveler may move the level toward the target. With both at **0 dB** it leaves the level alone. Open **Range up** to let it lift quiet material and **Range down** to let it tame loud material. Larger ranges mean more aggressive leveling.

In practice:

- **Interview / podcast with an uneven talker**: set the Target to your delivery level, open **Range up** ~6–10 dB, and the Leveler brings the quiet sentences forward while leaving the loud ones alone, so every line lands at a consistent level.
- **A whole playlist or episode**: because the Leveler works in loudness, it keeps level consistent from track to track and scene to scene, which is what streaming and broadcast delivery ask for.
- **A dynamic vocal in a mix**: a gentle **Range down** tames the loudest phrases before they reach the rest of the chain, so the compressor and limiter see a steadier signal and work less hard.

Noise Floor modes

The noise floor tells POWAIR what counts as "real program" versus background noise or pauses, so room tone between phrases stays down.

- **Soft** *(default)*: a smooth gate. Below the floor the Leveler eases off, and **NF Atten.** turns down what sits below the floor by up to 40 dB, so room tone and hiss between phrases stay in the background and the signal stands clear.
- **Hold**: the Leveler *freezes* its current gain below the floor, so quiet tails stay put.
- **Off**: the gate stays open. Quiet but present signal is still brought up (within Range up). On genuine silence, the Leveler eases back to unity and rests.

Note: the NF Threshold always stays at least 3 dB below the Target Level. Lowering Target pushes the NF Threshold down with it, and the NF Threshold can't be raised past that gap. That's by design.

8. Learn: one-click setup

Learn configures the Leveler for your material in one step. Press it and let a representative section play; a progress ring fills as it counts down **15 seconds** of program. Only time with signal counts, so the countdown pauses while the input is silent, as when playback stops. When it finishes, it automatically sets:

- **Input Trim**: to bring the program to your Target Level.
- **NF Threshold**: placed sensibly between your background/pauses and the actual program.
- **Range up / down**: sized to the natural dynamics of the material.
- **Integration times**: faster for dynamic material, slower for steady material.

All the moves Learn makes are ordinary parameter changes: your DAW records them like manual edits, and you can undo them.

Good to know

- Play a section that's **representative** of the whole (typical loud + quiet parts) for the best result.
- If what it hears is **near-silent**, Learn stops and leaves your settings untouched.
- You can **cancel** at any time (press Learn again, or close the editor), and your settings stay exactly as they were.

Treat the result as a starting point, and adjust anything afterward.

9. Leveler Automation (Write / Read)

The Leveler can print its gain movements as automation so you can capture a ride once and replay it exactly.

Mode	What happens
Live *(default)*	The Leveler computes its gain in real time (playback only; automation is left untouched).
Write	While the transport plays, POWAIR streams its live Leveler gain to the host as automation on the **Leveler Automation Gain** lane.
Read	The recorded gain takes over: playback follows exactly the envelope you captured.

In Write:

- Writing happens **only while the transport is playing**, and is wrapped in a clean automation gesture, so hosts like Logic, Pro Tools, Ableton Live and Cubase record a smooth, continuous envelope that stays put.

In Read:

- The recorded envelope is authoritative: it's what you hear, and it drives the meters and the downstream stages.
- The Leveler's own controls (ranges, integration, noise floor, NF Atten., link, and the Target and NF Threshold handles in the display) are **grayed out** while in Read, because the recording is in charge. The mode buttons stay active so you can switch back to Live or Write.

Typical workflow: set the Leveler in **Live**, switch to **Write** and play the section to capture the ride, edit the recorded lane in your DAW if you like, then switch to **Read** to lock it in. Sometimes the best fader ride is the one you only have to do once.

10. The Compressor

POWAIR's compressor is built around one control: **Compression**, in **dB (0–40 dB)**, sets how hard the compressor works, and turning it up always means more control. That one amount does the work that threshold and ratio share in a traditional compressor, so it's quick to dial in.

Adaptive Compression then sets how that control relates to level. At **0 %** the compressor responds like a classic threshold: the louder a passage, the harder it's compressed. Raised toward **100 %**, it follows the material's dynamics instead (how far its peaks rise above its overall level), so a quiet passage and a loud one with the same dynamics get the same reduction.

Behind these controls is a detector that **follows the program**: it reads the audio as transients and sustained material, **looks ahead** (using the plugin's Lookahead setting) to respond to what's coming, and references its adaptive response to **loudness**, the way broadcast and mastering measure. That keeps it consistent across very different material. It also works **hand-in-hand with the Leveler**: the Leveler evens out long-term level toward your Target first, then the compressor shapes dynamics on top of an already-consistent signal.

In short

- **One amount.** Set Compression in dB for how hard it works, with no threshold or ratio to juggle.
- **Program-adaptive.** Raise *Adaptive Compression* and it measures the program against itself, so a single setting stays right across a whole song or a dynamic performance.
- **Transient-aware.** *Punch* preserves as much attack and impact as you like. Set it by ear.
- **Loudness-referenced.** Its adaptive response uses the same loudness measure as POWAIR's meters, so the compressor and the rest of POWAIR work on the same scale.
- **Auto make-up.** Perceived loudness is held as you turn the knob, so A/B comparisons stay level-matched.

Control	Range	Default	What it does
Compression On/Off	Off / On	On	Enables the compressor.
Compression	0 … 40 dB	0 dB	How hard the compressor works, in dB. How that relates to level is up to Adaptive Compression.
Attack	0 … 100 ms	10 ms	How quickly it grabs transients.
Recovery (ms)	10 … 5000 ms	300 ms	How quickly gain recovers after reduction (when Beat Sync is off).

Control	Range	Default	What it does
Recovery (beats)	musical divisions	1/4	Recovery locked to the host tempo (when Beat Sync is on).
Beat Sync	Off / On	Off	Switch recovery between milliseconds and tempo divisions.
Punch	0 … 100 %	100 %	How much transient impact is preserved through the compression. Set it by ear.
Adaptive Compression	0 … 100 %	0 %	How much the compression follows the material's dynamics rather than its loudness (0 = loudness-driven, 100 = fully program-adaptive).
Auto Gain Compensation	Off / Auto	Auto	Program-aware make-up that holds perceived loudness as you compress.
Make Up Gain	−40 … 0 dB	0 dB	Manual make-up gain (takes over when Auto is off).

Adaptive Compression

Blends the response from **loudness-driven** to **program-adaptive**:

- At **0 %**, the compressor responds to how loud the material is, like a conventional compressor: louder passages get more reduction.
- As you raise it, the response follows the material's dynamics instead: how far its peaks rise above its overall level. At **100 %**, a quiet passage and a loud one with the same dynamics get the same reduction, so one setting works across the whole performance.

In practice: on a verse-to-chorus vocal or a performance that swings from whispered to belted, raise **Adaptive Compression** and one setting holds up across the whole take: the whispered verse is shaped just like the belted chorus, with no automation.

Punch: transient control, kept separate from Attack

In a traditional compressor the **attack time** does double duty: it sets both how *quickly* the compressor clamps down and how much transient *snap* survives. That forces a compromise: slow the attack to keep drums punchy and you loosen

its grip on everything else; speed it up for tight control and you flatten the transients that give the performance its impact.

Punch removes that trade-off. It controls how much of a transient's leading edge and impact makes it through the compression **independently of the Attack time**, so you can have a fast, controlled response *and* the snap you want:

- **High Punch** (the default) keeps hits, pick attacks, plosives and stick transients lively and up-front, so the sound stays open and dynamic.
- **Lower Punch** trades that snap for a smoother, more even, more "held" sound: denser and more controlled.

Attack controls the timing. **Punch** controls the impact. A single attack control normally has to do both.

In practice:

- **Drums**: use a fast **Attack** for solid control of the sustain and room, and keep **Punch** high so the stick attack still cuts through. You get controlled drums that still hit hard.
- **Bass**: lower **Punch** for an even, planted low end; raise it to let finger or pick attack define each note.
- **Mix / bus glue**: high **Punch** glues the balance while keeping transients alive; lower it for a more pressed, up-front sustain.

Auto Gain Compensation & Make Up

It's easy to mistake louder for better. We've all done it. Auto Gain Compensation lets you hear the compression, not the volume change.

With **Auto Gain Compensation** on (the default), each time you change a setting POWAIR predicts how much the new settings will change the loudness of the program it has been hearing, and applies the inverse, so perceived level stays put as you move the Compression knob. This compensation was **learned from a large body of real-world audio**, making it program- *and* setting-aware; that's what lets you push compression hard and keep comparing fairly by ear. Grab or type into **Make Up Gain** to take manual control; Auto steps aside as soon as you do.

About Recovery & Beat Sync. Because the compressor is program-following and loudness-referenced, its timing is presented as **Recovery** (how the gain settles back) and can even be locked to the host tempo with **Beat Sync**. While Beat Sync is on, the millisecond value follows the synced time, so switching Beat Sync off keeps the recovery you were hearing; the beat value stays as you set it for the next time you sync.

Side-Chain Filter (SCF)

The compressor detects through a filter, so it responds to the part of the signal that matters most. For example, it can keep low-end rumble from driving the whole track down. The filter changes what the compressor hears, not the audio it compresses. **Solo**, below, is the one control that changes that.

The filter sits on whatever the compressor is detecting: the main signal, or the side-chain input when **Side-Chain Mode** is *Classic* (see Side-Chain & Delta Duck™).

Control	Range	Default
SCF On/Off	Off / On	Off
SCF Type	Band Pass · Band Stop	Band Pass
Low Freq	20 Hz … 20 kHz	60 Hz
High Freq	20 Hz … 20 kHz	20 kHz
Solo	Off / On	Off

Solo hands the output over to the feed the compressor detects from (the main signal, or the side-chain key in *Classic* mode), with whatever compression is happening applied to it, so you hear the detector's own signal through the compressor. **SCF** then decides where the band sits in that chain:

- **SCF on**: the filter sits *before* the compressor, so you hear the filtered signal the compressor is reacting to. Dial the band in by ear (for example, narrow in on a voice's presence range so bass or rumble stays out of the trigger), or leave Solo on as a sound of its own: a filtered, compressed chain, which is how several factory presets ship.
- **SCF off**: the filter sits *after* the compressor, giving you a post-compression equalizer while the compression itself stays exactly as it was.

11. Side-Chain & Delta Duck™

POWAIR can duck or key its processing from an external side-chain source. Feed a "key" signal (a voice, a kick, a click) into the plugin's side-chain input, then choose how it drives the plugin.

Control	Range	Default	What it does
Side-Chain On/Off	Off / On	Off	Enables the side-chain.
Side-Chain Mode	Classic · D-Duck	Classic	Classic side-chain or Delta Duck.
D-Duck Threshold	−60 … 0 LUFS	−50 LUFS	The level below which the key counts as silence. It gates out mic bleed, room tone and breaths so a quiet room leaves your material alone. In **Classic** mode the Leveler gates the key on its own **NF Threshold** instead.
Target Delta	0 … 40 dB	0 dB	The minimum distance the ducked signal is held *below* the key (0 = no louder than the key; higher = a bigger gap, so more ducking).
Max Attenuation	0 … 40 dB	40 dB	A safety cap on how deep the duck can ever go.
Attack	1 … 1000 ms	10 ms	How quickly ducking engages.
Recovery (ms)	10 … 5000 ms	400 ms	How quickly ducking releases (when Sync is off).
Recovery (beats)	musical divisions	1/4	Recovery synced to tempo (when Sync is on).
Recovery Sync	Off / On	Off	Switch recovery between milliseconds and tempo.
Response (hold)	0 … 2000 ms	1000 ms	How long D-Duck holds onto the key's loudness as it falls, so sentence tails and the dips between words leave the bed steady. Once the key drops below the D-Duck Threshold, the duck releases at the Recovery speed.

The controls from **Target Delta** down are D-Duck's own: they become active when the side-chain is on in D-Duck mode, and your host's automation list

names them with a *D-Duck* prefix (*D-Duck Attack*, *D-Duck Recovery*, ...). The **D-Duck Threshold** is the *Threshold* handle in the display's Side Chain view.

Classic vs. Delta Duck (D-Duck)

- **Classic**: the key drives POWAIR's own dynamics. The Leveler rides your material by the key's loudness, against your Target Level and within its ranges: a key louder than the target pulls the material down, a quieter one lifts it. The compressor responds to the key too, so the louder the key, the harder it compresses. Use it for keyed leveling and side-chain compression.
- **Delta Duck (D-Duck)**: loudness-targeted ducking. It continuously holds a **target loudness gap** between your material and the key, self-correcting as either level moves. You set *how far below the key* the bed should sit (**Target Delta**), and D-Duck turns the bed down just enough to keep it there: deeper as the key grows quieter, easing back as the key grows louder.

Why it helps. Ducking usually begins with the music: how far down should it go when the voice comes in? Delta Duck starts with the mix you're after: how far below the voice should the music sit? If you want the music 12 dB below the voice, set **Target Delta** to 12 dB, and that balance holds across varied, unpredictable material.

In practice:

- **Music bed under a voice-over or podcast.** Narration swings from soft to loud and beds vary track to track. Set **Target Delta** to the gap you want and the bed stays that far under the voice for the whole episode, with no per-track tweaking.
- **Dialogue over a score or trailer bed.** As the cue swells and falls, D-Duck keeps dialogue sitting a consistent amount above the music, so it stays intelligible as the music moves underneath.
- **DJ / radio talk-over.** The music dips to a clean, consistent level the instant the mic opens and glides back on release, and **Response** keeps that dip steady through the natural gaps between words, so the music stays smooth.
- **Bass under the kick.** Insert POWAIR on the bass and feed the kick to its side-chain. Set **Target Delta** to the balance you want between the two, and D-Duck keeps the bass that far under the kick whether the drummer plays soft or hard, so the low end stays consistent through the song. Use **Attack** and **Recovery** to set how closely the bass follows each hit.

Dialing it in: set **Target Delta** for the separation you want, use **Attack / Recovery** for how fast the duck moves (sync Recovery to tempo for musical material), raise

Response if the bed flutters in speech gaps, and lift the **D-Duck Threshold** so only real signal on the key opens the duck. Leave **Max Attenuation** wide open, or bring it down to keep the bed always present.

Note: the **Side-Chain Filter** is a compressor control rather than a ducking one. It filters what the *compressor* detects (the side-chain input in **Classic** mode) and leaves D-Duck's own detection untouched. See The Compressor.

12. Clipper / Saturator

A unified clipper and saturator with high-quality anti-aliasing, for adding density, control, and tone before the limiter. Its controls sit in the Limiter panel, and it runs while the Limiter is on.

Control	Range	Default	What it does
Clipping Mode	Off · Clip · Sat	Off	Choose clipping or saturation (or off).
Knee	−12 … 0 dB	−4.5 dB	Clip character: **0 dB = hard**, **−12 dB = softest** (*Clip* mode).
Drive	25 … 100 %	70 %	How hard the signal is pushed into the saturator (*Sat* mode).

- **Clip**: shaves peaks. Use a hard **Knee** (near 0 dB) for a transparent peak-catcher, or soften the knee for a rounder, more forgiving clip.
- **Sat** (Saturate): adds harmonic warmth and density; push **Drive** for more.

In practice: the **Maximizer** drives level into the clipper, which shaves the sharp, one-off peaks that would otherwise trigger the limiter hardest, so the Maximizer can lift overall loudness further while the limiter stays clean. A hard **Clip** knee catches transients on a drum bus transparently; a softer knee or a touch of saturation (**Sat** mode) adds weight and color to bass, guitars or a mix, so you get more apparent loudness and a richer tone together.

13. Maximizer & Limiter

The **Maximizer** drives level into the clipper and limiter for loudness and density; the **true-peak Limiter** is the final brick wall that holds your output at the **Ceiling**.

Control	Range	Default	What it does
Maximizer Threshold	−30 … 0 dB	0 dB	Drives gain into the clipper and limiter: −11 dB adds 11 dB. Labeled *Threshold* in the Limiter panel and the display; hosts list it as *Limiter Threshold*.
Limiter On/Off	Off / On	On	Enables the whole limiter stage, the Maximizer and Clipper / Saturator included.
Ceiling	−24 … 0 dBTP	−1 dBTP	The true-peak ceiling: the limiter's output stays at or under it.
Recovery Mode	Auto · Manual	Auto	Auto sets both recovery times from the program as it plays; Manual takes yours.
Transient Recovery	5 … 100 ms	20 ms	How long the limiter takes to let go after a short peak: its whole recovery, a brief hold included (*Manual* mode).
Sustain Recovery	50 … 1000 ms	300 ms	How readily it settles onto held loudness, and how quickly it leaves it (*Manual* mode).

- The **Maximizer** is the simplest way to get loud: it drives extra gain into the clipper and limiter. The further you bring its **Threshold** down, the harder it pushes. The limiter catches the peaks, so the result is more loudness and density, held at the **Ceiling**. Set your Ceiling first, then lower the Maximizer Threshold until the loudness feels right.
- The Ceiling is a **true-peak (inter-sample)** ceiling in **dBTP**, so your output stays clean even after conversion to lossy formats.
- The limiter recovers on **two envelopes** working together: one handles transient peaks, recovering quickly after individual hits; the other manages sustained gain reduction with a smoother, steadier release underneath.
- **Auto** recovery sets both recovery times from the program as it plays, and is the place to start. **Transient** follows the bass: under a low note, the limiter holds its gain steady across the note's cycle, keeping the low end clean; with little bass underneath, it recovers from each hit as quickly as it can. **Sustain** follows how steady the loudness is: it holds still through a steady passage, and moves quickly when a chorus lands or a verse drops.

- Switch to **Manual** to set the two recovery times yourself. They work together rather than in turn. **Sustain** follows the steady reduction a loud passage asks for: how readily the limiter settles onto it and how quickly it leaves it. **Transient** sets the whole recovery after the peaks on top of that, a brief hold included, whatever the passage underneath is doing. Reach for it when transients sound dulled.

In practice: for a competitive streaming or playlist master, pick your loudness target, then ease the **Maximizer Threshold** down while you watch **Integrated LUFS** climb toward target, and keep an eye on the limiter's **gain reduction**. Back off a little if it starts to sound pressed.

Choosing a loudness-delivery target (§16) sets the **Ceiling** for you to that standard's dBTP value.

14. Lookahead & oversampling

Both live in the **settings cog** menu.

Lookahead lets POWAIR's dynamics respond to peaks and level changes before they arrive, for cleaner control. The limiter keeps its own short look-ahead in every timed mode.

- **Modes:** Live / 10 / 25 / 50 ms (default **50 ms**).
- **Live** mode gives the **lowest latency** and holds the same Ceiling as the timed modes: POWAIR's own delay stays at about 7 ms, which it leaves unreported to your DAW, so the DAW never delays the rest of your session to match. It's ideal for tracking and live monitoring. The timed modes add exactly their labeled latency, which your DAW compensates automatically.

Switching the lookahead mode during playback causes a brief mute by design, so pick your mode before a critical pass.

2× Oversampling *(on by default)* oversamples the processing chain ahead of the limiter, for cleaner results from its non-linear stages, such as the clipper/saturator. It's safe to toggle during playback (expect a brief hiccup). The limiter runs at your session's sample rate and always enforces the true-peak ceiling, whatever the oversampling setting.

15. Metering

POWAIR's meters show both **level** and **loudness**.

Input meter (left)

- Input level with a **peak-hold** bar.
- An overlaid **Leveler-action strip**: it deflects **warm** when the Leveler is boosting and **cool** when it's attenuating, so you can see the ride.

Output meter (right)

- Output level with true-peak history.
- An **output-vs-input loudness delta**: deflects **up (warm)** when POWAIR makes the signal louder overall, **down (cool)** when quieter. It reads ~0 at unity/bypass.

Loudness readouts (across the top of the central display):

- **Momentary** loudness: while the Leveler is on, the input's loudness as the Leveler hears it (the key's, in *Classic* side-chain mode); otherwise the output's. It clears shortly after the input goes silent.
- **Short Term** loudness.
- **Integrated** loudness.
- **LRA**: Loudness Range.
- **True Peak**.

Short Term, Integrated, LRA and True Peak measure the output and are BS.1770 / EBU R128 compliant. With the **Side Chain** tab open in *D-Duck* mode, all five measure the side-chain key instead.

The **Short Term** and **Integrated** readouts turn **red** only when they go *above* your loudness target; sitting exactly on target doesn't flag. The target is the delivery standard's loudness or, on *Custom*, your Target Level while the Leveler is on. **True Peak** flags red above the delivery standard's dBTP figure, or above 0 dBTP on *Custom*. Momentary and LRA stay neutral.

Meter styles (cog → Meter):

- **Neutral** *(default)*: on a stereo instance, separate **L / R** bars; mono shows single bars.
- **Spectral**: a single bar with the output colored by its spectrum (the classic POWAIR look).

Stereo-vs-mono display is automatic by channel count. Meter style is a global preference (see §18).

16. Loudness targets & delivery standards

The **loudness-target selector** on the bottom bar sets your **Target Level (LUFS)** and **Limiter Ceiling (dBTP)** to a chosen delivery standard in one click, and points the meter's over-target flags at those values.

Pick **Custom** to use your own Target and Ceiling. Manually changing Target or Ceiling away from a preset's values switches the selector back to **Custom** automatically.

Group	Target	LUFS	Ceiling (dBTP)
Custom	Custom	*your value*	*your value*
Broadcast	EBU R128	−23	−1
Broadcast	ATSC A/85	−24	−2
Broadcast	ARIB TR-B32	−24	−1
Broadcast	China GY/T 282	−24	−2
Broadcast	Australia OP-59	−24	−2
Netflix	Dialog-Anchored	−27	−2.3
Netflix	Non-Dialog	−24	−2
Streaming	Apple Music Stereo	−16	−1
Streaming	Apple Music Atmos	−18	−1
Streaming	YouTube	−14	−1
Streaming	Amazon Alexa	−14	−2
Spotify	Loud	−11	−2
Spotify	Normal	−14	−1
Spotify	Quiet	−19	−1
Podcast	Stereo	−16	−1
Podcast	Mono	−19	−1
AES TD1008	Assorted	−18	−1
AES TD1008	Drama	−18	−1
AES TD1008	Interstitial	−18	−1
AES TD1008	Mixed Format	−17	−1
AES TD1008	Music: Album-Loudest	−14	−1
AES TD1008	Music: Track Norm	−16	−1

Group	Target	LUFS	Ceiling (dBTP)
AES TD1008	News / Talk	−18	−1
AES TD1008	Pop Music	−16	−1
AES TD1008	Sports	−17	−1
AES TD1008	Virtual Assistant	−18	−1

Loudness standards evolve. Always confirm the current spec with your distributor or broadcaster before final delivery.

17. Presets & A/B

Presets

- Use the **three-dot menu** on the preset pill to save, load, and manage presets; use the **prev/next arrows** to browse.
- POWAIR includes a library of factory presets covering common sources and delivery jobs, for example:
    - **Voice & broadcast:** *Voice Over −24 LUFS*, *Voice Over −16 LUFS*, *VO EBU R.128 (−23 LUFS)*, *VO ATSC A85 (−24 LUFS)*, *VO Podcast (−16 LUFS)*, *Rob Byers Dialogue Bus*, *Expressive Lead Vocal*, *Ballad Vocal*, *Playlist Leveler*.
    - **Drums & percussion:** *Wide Thick Drums*, *Chicago Drums*, *Dirty Beats*, *Drums Ambience Squeeze*, *Percussion Room Extractor*.
    - **Bass & guitar:** *Solid Bass*, *Acoustic Bass*, *Sub Mover*, *Thicker Chugging Guitar*, *Tight Rhythm Guitar*, *Acoustic Picking*.
    - **Keys & melodic:** *POWAIRful Grand Piano*, *Percussive Rhodes*, *Stereo Arpeggio*.
    - **Glue & mastering:** *Adaptive Glue*, *Smoother*, *Closer*, *Brickwall Limiter Stereo*, *Brickwall Limiter Dual Mono*.
    - Plus **Init** (a clean starting point) and the hero preset **"You've Got The POWAIR 2."**
- Presets you saved in **POWAIR 1** appear in the preset browser too, and convert to version 2 automatically when you load them.

A/B compare

- The **A / B** slots hold two independent full snapshots of every setting. Switch between them to compare, and use the **copy arrow** to duplicate the active slot into the other as a starting point for a variation.

18. Global preferences

A few options in the **settings cog** are **global**. They apply to every instance and every session, and switching presets doesn't change them:

- **UI Scale**: 50 %–200 % in 25 % steps.
- **Meter mode**: Neutral / Spectral.
- **Display-window length**: how much history the central display shows (4–30 seconds).

Everything else is saved with your session and presets as usual: all processing controls, the target, and the cog's **Lookahead**, **2× Oversampling** and **peak-hold time** (3 s / 10 s / Infinite, for the held-peak ticks). The A/B slots are saved with your session.

19. Working in your DAW

POWAIR behaves consistently across AU, VST3 and AAX. A few host-specific notes:

- **Automation:** nearly every control can be automated by your host, and continuous controls automate smoothly. The **Leveler Automation Mode** switch stays manual by design.
- **Leveler Automation Gain** is the lane POWAIR writes to in Write mode (§9): record it while playing, then set the plugin to Read.
- **Pro Tools:** open a control's automation menu with the standard modifier-click (**Cmd+Opt+Ctrl-click** on macOS, **Ctrl+Alt+Start-click** on Windows); it opens on every automatable control, including the on-screen display flags, while preserving the value.
- **Side-chain:** connect a key input to the plugin's side-chain bus, turn the side-chain on and set **Side-Chain Mode** to Classic or D-Duck. POWAIR loads and runs normally on mono tracks too, with or without a side-chain connected.
- **Reporting a build:** the **About** box shows the exact version; quote it if you send us feedback.

20. Troubleshooting & FAQ

Getting POWAIR to appear in your DAW. Rescan plugins in your host's plugin manager and confirm the format your DAW uses (AU/VST3/AAX) is installed. Reopen the DAW if needed.

A control looks grayed out or won't move.

- A whole panel dims while its section is switched off (the power icon on its tab) or the plugin is bypassed.
- Some controls work in one mode only and dim in the others: **NF Atten.** in *Soft* noise-floor mode, the Limiter's two recovery times in *Manual*, **Knee** in *Clip*, **Drive** in *Sat*, and the D-Duck controls in *D-Duck* side-chain mode.
- In the Leveler, the **NF Threshold** stays at least 3 dB below the **Target Level**: lowering Target pushes it down, and it can't be raised past the gap. That's by design.
- In **Read** automation mode, the Leveler's controls are intentionally grayed out, because the recorded envelope is in charge. Switch back to **Live** or **Write** to edit them.

Getting more output level. Remember **Output** is the *final* level after the limiter, so raising it above 0 dB takes your peaks over the Ceiling. To get louder within the Ceiling, push the **Maximizer Threshold** to drive more into the clipper and limiter.

Why does the Momentary LUFS keep moving after playback stops? It follows the input until the input falls silent, then clears within moments, so a reverb or delay tail keeps it moving until the tail dies away.

A brief mute when switching lookahead. That's expected; switch the lookahead mode between takes.

Can I use POWAIR on the master bus? Yes. Pick your delivery target, and with **Output** at 0 dB or below the true-peak limiter holds your output at the ceiling.

Does oversampling change my latency? In the timed **Lookahead** modes, reported latency is exactly the mode's time, with oversampling on or off. In **Live**, 2× Oversampling adds a few samples, which POWAIR reports to your DAW.

21. Support & feedback

If something isn't working as expected, contact Sound Radix support. When you report a problem, please include:

- The **build version** (from the **About** box).
- Your **host + version**, **OS**, and plugin **format** (AU / VST3 / AAX).
- **Sample rate / buffer size**, the exact **steps** to reproduce, and what you **expected vs. saw**. A short screen or audio capture helps a lot.

Thanks for helping us make POWAIR better.

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