

Desert Moon Audio

AIR ENHANCER

AE-07

Air Band Equaliser



Air Enhancer does one thing: it opens up the top end. Not with a narrow peak that hunts for brightness, but with a very wide, very gentle shelf that begins a long way below the frequency printed on the panel and climbs slowly from there. That slow climb is the whole point — it is what lets you add a great deal of air before anything starts to sound bright.

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WHY 40 KHZ IS ON THE DIAL

Two of the five settings — 20 kHz and 40 kHz — sit at or above the highest frequency a 44.1 or 48 kHz session can represent. They are not decoration. Because the shelf is so wide, a corner placed above the audible band still tilts the top octave you *can* hear, and it does it without putting a corner anywhere near the material. The unit runs its filters at four times the session rate so those settings behave properly rather than folding back on themselves.

1 • Installation

Air Enhancer installs as an Audio Unit and a VST3. Copy the components you need to these locations and restart your host:

Audio Unit	~/Library/Audio/Plug-Ins/Components/Air Enhancer.component
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VST3	~/Library/Audio/Plug-Ins/VST3/Air Enhancer.vst3
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Most hosts scan for new plug-ins at launch. Logic Pro validates Audio Units on first sight and will show Air Enhancer under **Desert Moon Audio** once that finishes.

2 • Quick Start

The unit is designed to be usable in three moves. Everything else on the panel is refinement.

Add air to a vocal

- Set **AIR BAND** to **10 kHz**.
- Bring **AIR GAIN** up until the vocal lifts out of the track — usually somewhere between 3 and 6.
- If it now sits too loud, pull **LEVEL TRIM** down a decibel or two.

Open up a mix bus

- Set **AIR BAND** to **20 kHz** or **40 kHz**.
- Use small amounts of **AIR GAIN**. On a full mix, 2 to 3 is a lot.
- Switch **MODE** to **SIDE** if you want the mix to widen and breathe without making the lead vocal any brighter.

THE FIRST THIRD OF THE DIAL

AIR GAIN is deliberately slow at the bottom. From 0 to 3 you are working in fractions of a decibel to about three decibels, which is the range that matters on a mix bus. The dial does not become dramatic until the upper half.

Listen to what you are adding

Press **IN/OUT** to compare. The switch latches, and the green lamp beside it is lit whenever the unit is in circuit. Bypass here is genuinely transparent — the signal path, its latency and its phase are unchanged, so an A/B tells you about the air and nothing else.



- 1 **Preset bar.** Step through presets, save your own, flip between two settings with A/B, and undo or redo any move.
- 2 **MODE.** Sends the air to the middle of the stereo image, to both sides, or only to the sides.
- 3 **IN/OUT.** Latching bypass, with a lamp that shows when the unit is in circuit.
- 4 **AIR GAIN.** How much air, 0 to 10.
- 5 **AIR BAND.** Where the shelf sits: OFF, 2.5, 5, 10, 20 or 40 kHz.
- 6 **PEAK and SIGNAL.** Red warns of clipping; green shows the unit is passing audio.
- 7 **LEVEL TRIM.** Output trim, -24 to 0 dB.

Working the panel

Every knob responds to a vertical drag. **AIR GAIN** and **LEVEL TRIM** show their value in a bubble while you move them; hold **[⌘]** for fine adjustment, and double-click any control to return it to its default.

AIR BAND and **MODE** are switches rather than continuous controls — they step between marked positions. Changing the band while audio is playing is safe: the unit crossfades between the two curves over twenty milliseconds instead of switching, so a sweep through the positions does not click.

The window can be resized by dragging its edge. The panel is drawn rather than scaled from a picture, so it stays sharp at any size.

The six-position switch chooses where the shelf sits. What it does *not* choose is where the boost starts — that is always a long way lower.

A conventional shelf turns a corner at its frequency and flattens out shortly after. This one takes a couple of octaves to get there. Set to 10 kHz with AIR GAIN at 10, the curve is already up nearly 3.5 dB at 3 kHz and 6 dB at 5 kHz, and it keeps rising past the top of hearing.

That is why the higher settings are the useful ones on finished material. At 40 kHz the audible result is a gentle tilt — barely a decibel at 8 kHz, five at 18 kHz — which reads as openness rather than treble.



Six positions. OFF takes the unit out of the signal path entirely.

What each setting is for

OFF	No boost. The audio passes through untouched.
2.5 kHz	Presence rather than air. Pushes a voice or a guitar forward in the track. Heavy-handed on a full mix.
5 kHz	Articulation and attack — pick noise, consonants, the front edge of a snare.
10 kHz	The everyday setting. Air on a vocal, sheen on acoustic guitar, lift on overheads.
20 kHz	Top-octave openness with almost nothing below 5 kHz. The safest choice on a mix bus.
40 kHz	The gentlest tilt of all. Use when a mix feels closed in but you cannot point at a frequency.

Measured response

Measured through the plug-in at 48 kHz, in decibels relative to the input. Note how far below the marked frequency each curve begins.

BAND	GAIN	1 K	3 K	5 K	8 K	10 K	14 K	18 K
2.5 kHz	5	+1.90	+4.54	+4.92	+5.02	+5.07	+5.11	+5.14
2.5 kHz	10	+4.86	+11.56	+12.50	+12.76	+12.87	+13.01	+13.08
5 kHz	5	+0.75	+2.83	+4.17	+4.85	+4.93	+5.00	+5.05
5 kHz	10	+1.98	+7.22	+10.63	+12.31	+12.51	+12.69	+12.83
10 kHz	5	+0.22	+1.34	+2.38	+3.59	+4.18	+4.76	+4.91
10 kHz	10	+0.61	+3.45	+6.07	+9.16	+10.65	+12.10	+12.47
20 kHz	5	+0.06	+0.45	+1.02	+1.86	+2.35	+3.20	+3.91
20 kHz	10	+0.16	+1.21	+2.66	+4.76	+5.99	+8.16	+9.96
40 kHz	5	+0.01	+0.11	+0.29	+0.66	+0.93	+1.48	+1.98
40 kHz	10	+0.03	+0.30	+0.79	+1.74	+2.44	+3.80	+5.06

One dial, marked 0 to 10, setting how far the shelf rises. At 10 the plateau reaches +15 dB.

The scale is not linear in decibels, and that is deliberate. The bottom of the travel is stretched out so the small moves — the ones that decide whether a mix bus sounds open or hyped — get most of the dial. The top of the travel is where it becomes an effect.



Shown at 5.5, roughly +6.7 dB at the plateau.

DIAL	BOOST AT THE PLATEAU	IN PRACTICE
1	+0.67 dB	Barely there. Useful on a finished master.
2	+1.71 dB	Audible on a mix bus without changing its character.
3	+2.95 dB	About as far as most mixes want to go.
5	+5.88 dB	Clearly an effect. Good on a single voice or instrument.
7	+9.27 dB	Strong. Watch the PEAK lamp.
10	+15.00 dB	Maximum.

Why a big boost does not turn brittle

The filter is not placed in series with your audio. The unit works out the difference between the filtered and unfiltered signal — that difference *is* the air, and nothing else — rounds it off with a gentle soft clip, and adds it back.

Two things follow from that. The signal you started with passes through untouched, so the body of the sound is never coloured by the process. And the added band self-limits as it gets loud: push AIR GAIN hard and the shimmer thickens instead of spitting. With AIR GAIN at zero there is nothing to shape and the stage does nothing at all.

WATCH THE LEVEL, NOT THE DIAL

Air is added on top of what is already there, so a big boost raises the peak level of the whole signal. That is what LEVEL TRIM is for, and what the PEAK lamp is watching.

A three-position switch deciding which part of the stereo image receives the air. The rest of the signal is untouched either way.

The unit splits the incoming stereo into its middle — everything the two channels have in common — and its sides, which is everything they do not. The air is added to one, the other, or both, and the two are put back together.



MID, ST and SIDE.

MID Air on the centre only. Lifts the lead vocal, the snare and the bass out of a mix without touching the reverb and the wide guitars around them.

ST Air across the whole image. The default, and what you want on a single track.

SIDE Air on the sides only. The mix widens and the room opens up while the centre stays exactly as it was.

Where each one earns its keep

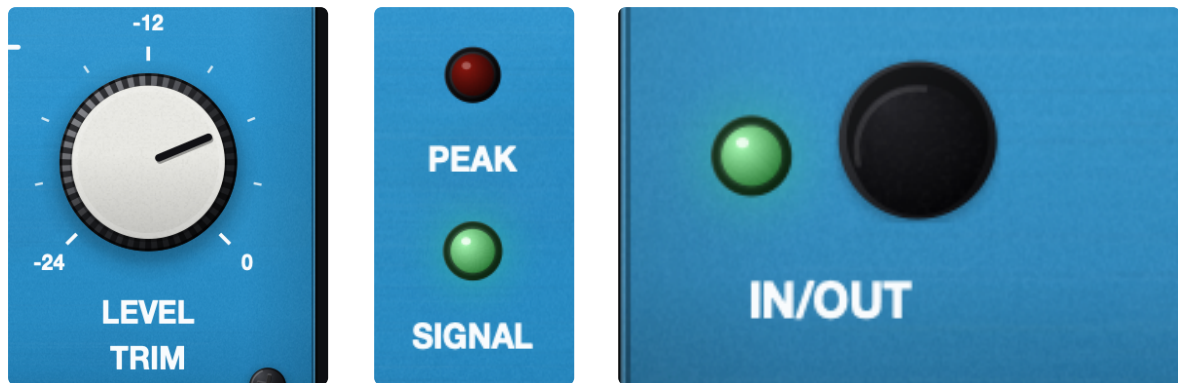
SIDE is the mix-bus setting. The usual problem with brightening a finished mix is that the lead vocal is already the brightest thing in it, and the centre is where the vocal lives. Putting the air on the sides gives you the openness without pushing the vocal any further forward.

MID is for the opposite problem — a mix that sounds wide and pretty but whose centre is buried. It sharpens the parts that carry the song and leaves the width alone.

ST is correct on individual tracks. On a mono source MID and ST do the same thing; SIDE has nothing to work on, and correctly does nothing.

MONO COMPATIBILITY

Air Enhancer applies the same filter to whichever channels you select, so nothing is phase-shifted between them. A mix aired in SIDE mode will still fold down to mono without the added air cancelling in a way that changes the balance — the side content simply disappears, as side content always does.



Level Trim

Output trim, from -24 dB up to unity at the fully clockwise position. It cuts only, which is correct for a unit that can only add: whatever air you dial in, the trim is there to give the level back.

Use it to match levels when you are comparing with IN/OUT. If the aired version is louder it will sound better whether or not it *is* better, and the trim is how you take that away.

The lamps

SIGNAL lights green when audio is passing. It comes up around -54 dBFS and is fully lit by -12 dBFS, so it is a sign of life rather than a meter.

PEAK lights red when the output comes within half a decibel of full scale, and holds for about a second so a brief overshoot cannot be missed. It watches the output, after the trim — so if it is lighting, pulling LEVEL TRIM down will clear it.

IF PEAK IS LIT

Air Enhancer will not clip internally — it has plenty of headroom, and the air band limits itself as it gets loud. A lit PEAK lamp is telling you about the level leaving the unit and arriving somewhere else. Pull LEVEL TRIM down until it stops.

In/Out

A latching switch: press it once and it stays in. The green lamp beside it is lit whenever the unit is in circuit, and the switch is drawn pressed in to match.

Bypass folds the curve flat rather than jumping around the signal path. The practical consequence is that switching is silent, and the delay through the plug-in does not change — so an A/B is a fair comparison rather than a jump cut. Measured, bypassed output matches the input to within 0.004 dB from 20 Hz to 18 kHz.

The plug-in reports its latency to the host, which compensates for it automatically. Nothing drifts out of time.



Left to right: previous, next, the name window, the A/B compare key, undo, redo, save, discard changes, and the list.

The arrows step through every preset in turn — the factory ones first, then your own. The name window shows what is loaded; clicking it opens the same list as the key at the far right. A small red dot appears beside the name once you have moved anything, and the circular arrow puts the preset back the way it was.

The save key writes the current settings under a name you choose. Your presets are files, kept in:

~/Library/Application Support/Desert Moon Audio/Air Enhancer/Presets

Being files rather than part of a session, they follow you between projects and between hosts, and you can back them up or pass them to someone else. **Open Preset Folder** in the list menu takes you straight there.

A/B, undo and redo

The lettered key holds two working states, **A** and **B**, and flips between them; the letter shows which one you are on. The first flip copies your current settings across, so nothing jumps — the two sides only diverge once you start turning knobs on one of them. Set the air one way on A, another way on B, and flip while listening. The slots are a listening tool: they survive closing the window but are deliberately not saved with the session.

The curved arrows are **undo** and **redo** for every control on the panel. A knob drag counts as one step, however long you hold it, and an A/B flip is likewise a single step, so undo walks back through what you did rather than through every millimetre of it. The keys grey out when there is nothing left in their direction.

IN/OUT IS NOT SAVED

A preset never carries the bypass state. A preset that arrives with the unit switched off reads as a broken preset, and it would also mark the preset as edited every time the switch was touched.

The factory presets

Init Flat. The starting point — the band is set but the gain is down. 10 KHZ · GAIN 0 · STEREO · 0 DB	Vocal Air The everyday lead-vocal setting. Lifts the voice out without adding edge. 10 KHZ · GAIN 4.5 · STEREO · -1.5 DB
Silk Top Top-octave sheen only. Nothing below about 5 kHz moves. 20 KHZ · GAIN 3.5 · STEREO · -1 DB	Acoustic Sparkle Brings up string detail and pick attack on acoustic guitar. 5 KHZ · GAIN 4 · STEREO · -1.5 DB
Drum Overheads Opens up cymbals and the room without making the kit harsh. 10 KHZ · GAIN 5.5 · STEREO · -2 DB	Mix Bus Sheen A small, safe amount across a finished mix. 20 KHZ · GAIN 2.5 · STEREO · -1 DB
Open The Sides Widens and opens a mix while leaving the lead vocal exactly where it was. 20 KHZ · GAIN 5 · SIDE · -1.5 DB	Presence Lift Lower and more forward — presence rather than air. For a buried source. 2.5 KHZ · GAIN 3 · STEREO · -1.5 DB

Lead vocal

10 kHz, AIR GAIN 4 to 6, MODE on ST. If the voice already has plenty of top and the problem is that it sits behind the track, try 5 kHz instead — that is articulation rather than air, and it moves a voice forward more effectively than brightness does. Trim back a decibel or two so you are comparing like with like.

Acoustic guitar

5 kHz for the pick and the fingers, 10 kHz for the body of the instrument to open up. Both at once is usually too much; choose the one that is missing.

Drum overheads and rooms

10 kHz at 5 or 6 opens up cymbals without the glassy edge that a narrow boost gives them. On a room mic, try SIDE — it pushes the width of the room without bringing up the snare that is sitting in the middle of it.

Mix bus

Start at 20 kHz with AIR GAIN around 2. Switch IN/OUT a few times; if you cannot decide whether it is better, it is probably right. The failure mode here is doing too much, and the top half of the dial exists for single sources, not for finished mixes.

If the mix needs to open up but the vocal is already bright enough, put MODE on SIDE and give it a little more.

Something that sounds closed in, but you cannot say why

40 kHz, AIR GAIN 4 to 6. The corner is far above anything in the material, so what you hear is a tilt rather than a boost. It is the setting to reach for when nothing is obviously wrong.

Two things worth avoiding

- **2.5 kHz on a full mix.** The curve is wide, so this setting reaches down into the upper mids where a mix is already crowded. It is a single-source setting.
- **Judging it loud.** Air added is level added. Match with LEVEL TRIM before you decide, or you will keep choosing the louder one.

TWO INSTANCES

Nothing stops you running the unit twice — say 40 kHz on the sides for width and 10 kHz in the middle for the vocal. The two curves add, so keep both amounts smaller than you would use alone.

AIR BAND

OFF · 2.5 · 5 · 10 · 20 · 40 kHz · default 10 kHz

Where the shelf sits. A wide, low-Q high shelf placed below the marked frequency, with a small broad lift just above it. OFF removes the boost entirely. Changing position crossfades over 20 ms.

AIR GAIN

0 – 10 · default 0

How much air, reaching +15 dB at the plateau with the dial at 10. The taper is weighted towards the bottom of the travel.

MODE

MID · ST · SIDE · default ST

Which part of the stereo image receives the air. Switching fades over 20 ms rather than cutting.

LEVEL TRIM

–24 – 0 dB · default 0 dB

Output trim. Cut only.

IN/OUT

In · Out · default In

Latching bypass. Ramps the curve flat and the trim to unity rather than switching the signal path, so it is click-free and the latency does not change. Not stored in presets.

Automation

All five controls are exposed to the host and can be automated. Gain and trim are smoothed over 50 ms, so a fast automation ramp arrives as a slide rather than a series of steps. The two switches crossfade, so they can be automated mid-programme without clicking.

The bar's undo covers moves made on the panel itself. Changes a host makes through automation are the host's to undo, as in any plug-in.

Host preset menus

The eight factory presets also appear in your host's own preset menu, at fixed positions. Your saved presets deliberately do not: a host stores a preset *number* in the session, so adding to that list would mean a preset saved today quietly changed what an old session recalled. Use the panel's own bar for your presets and they will always be the ones you saved.

ITEM	DETAIL
Type	Air band equaliser — wide high shelf with parallel band shaping
Formats	Audio Unit (v2), VST3
System	macOS 10.15 or later, Apple Silicon
Channels	Mono and stereo
Frequencies	2.5, 5, 10, 20, 40 kHz, plus OFF
Maximum boost	+15 dB at the shelf plateau
Output trim	−24 to 0 dB
Bypass accuracy	Within 0.004 dB of unity, 20 Hz – 18 kHz
Cleanliness	Aliasing at least 119 dB down; the air path's harmonics stay 65 dB or more below the signal up to gain 5, thickening only by design above it
Self-noise	None — silence in gives bit-exact silence out
Processing	32-bit float internally

Oversampling and latency

The filters run above the session rate so the 20 and 40 kHz settings behave properly instead of folding back. The factor is chosen from the session rate, and the resulting latency is reported to the host and compensated automatically.

SESSION RATE	OVERSAMPLING	LATENCY	
44.1 kHz	4×	61 samples	1.38 ms
48 kHz	4×	61 samples	1.27 ms
88.2 kHz	2×	49 samples	0.56 ms
96 kHz	2×	49 samples	0.51 ms
176.4 kHz	none	0 samples	0.00 ms
192 kHz	none	0 samples	0.00 ms

Air Enhancer AE-07 — version 1.0

Desert Moon Audio

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