



ECHELON AUDIO

EA-2A

Tube Optical Leveling Amplifier

USER MANUAL · v1.1.0



The EA-2A interface. Every control is documented below; hover any control in the plugin for the same description as a tooltip.

WHAT EA-2A IS

EA-2A is a tube optical leveling amplifier: a light source drives a photocell, and the cell's own physics — slow to react, slower to let go, lazier the longer it has been lit — does the leveling. Two knobs do the whole job. **Peak Reduction** decides how hard the light hits the cell; **Gain** is the tube makeup after it, which brings the level back and warms up as you push it. A COMP / LIMIT lever picks the gentle ~3:1 vocal law or a steeper peak-catching one.

The release is program-dependent by nature: a quick duck recovers fast, a sustained squash recovers slow, which is why it sits on a vocal for a whole song without pumping. The rear panel adds the modern conveniences — parallel Mix, a sidechain Emphasis trim, a sidechain high-pass, Cal, Ext SC and Auto Makeup — without changing how the two-knob front feels.

Matched Bypass is on by default: bypass compares at equal loudness, so the only thing you judge is the sound.

SIGNAL FLOW

IN → T4-style opto cell (Peak Reduction · COMP/LIMIT) → tube Gain stage → output iron → Mix (dry / wet, latency-aligned) → OUT · sidechain: program or Ext SC → SC HPF → Emphasis → feedback key → photocell

The detector is a feedback key: it listens after the cell, through the SC HPF and the Emphasis brightness trim, and lights the cell accordingly. Gain reduction happens in the optical attenuator, the tube stage restores level (and colours as it is driven), the output iron adds the low-end weight and silky top, and Mix blends the result against the latency-aligned dry signal.

Auto Makeup (rear, on by default) holds loudness steady as you move Gain and Peak Reduction, so you can audition the squeeze without chasing the fader.

EVERY KNOB, SWITCH AND SELECTOR

FRONT PANEL CONTROLS

Control	Range · default	What it does
Gain	0...40 dB · 12	Tube makeup after the cell — brings the level back and warms up as you push it.
Peak Reduction	0...100 · 40	How hard the light hits the cell — more = deeper, smoother leveling. The only compression control you need.
COMP / LIMIT lever	COMP / LIMIT · COMP	LIMIT is a steeper law for catching peaks; COMP is the gentle ~3:1 classic vocal setting. Lever up = LIMIT, down = COMP.
Meter	GR / OUT · GR	VU mode. GR shows how much the cell is pulling down; OUT shows output level against the 0 VU reference.

PRESS REAR TO FLIP THE UNIT

REAR PANEL

The fine print lives on the back: these controls change how the unit listens and how it sits in a chain, and they are saved with every preset.

Control	Range · default	What it does
Mix	0...100 % · 100	Parallel blend for thickness without losing the transient.
Emphasis	0...100 · 35	Sidechain brightness — higher makes the cell react more to sibilance and top-end energy (flat <-> bright).
SC HPF	Off (20)...300 Hz · Off	Stops bass from pumping the cell. The filter is on the detector only; the audio never passes through it.
Cal	-6...+6 dB · 0	Calibration — shifts the 0 VU reference ± 6 dB so the unit sits right in any chain.
Ext SC	off / on · off	External sidechain — key the compressor from the sidechain input instead of the program.
Auto Makeup	off / on · on	Holds loudness steady across Gain and Peak Reduction moves, so the squeeze is judged at equal level. Switch it off to ride Gain by hand.

METERS AND DISPLAY

Element	What it shows
VU	Needle ballistics. GR mode reads gain reduction downward from 0; OUT reads output level against 0 VU (0 VU = -18 dBFS, shifted by Cal).
Power lamp	She's on. The amber jewel is the tube/opto one — EA-3A's solid-state sibling glows blue.

SHARED ACROSS THE ESSENTIALS LINE

CHASSIS BUTTONS

Every Essentials unit shares one chassis, so the footer strip works the same way on all twelve. The buttons below are present on EA-2A; the ones the unit does not need are simply not there.

Button	What it does
Presets	Use-named factory starting points plus your saved USER presets. Pick one, tweak, then + Save your own; Del removes a USER preset (factory presets cannot be deleted).
A / B	Two independent settings slots. Click to flip between A and B while the audio runs; both slots are saved with the session.
A>B (copy)	Copy the current slot into the other one, so B starts from A and you only change the one thing you are auditioning.
ARTIST	The five-knob face: the same engine with only the controls that matter for a performance-led session, at a size that reads across the room. Toggle back for the full panel at any time.

Button	What it does
DELTA	Hear only what the unit is changing — output minus the latency-aligned input. If it sounds wrong here, it sounds wrong in the mix. The honesty check for any move.
BYPASS	Bypass the whole plugin.
= (Matched Bypass)	Bypass compares at equal loudness — no louder-is-better trick. On by default.
REAR	Flip the unit around for the fine-print controls (mix, sidechain filter, link, calibration and the unit's deeper options).
GR / +4 / +8	Meter mode. GR shows how much the unit is pulling down; +4 and +8 show output level against the 0 VU reference (0 VU = -18 dBFS, shifted by the Cal trim).
SAVE	Store the current settings as a USER preset you can recall anytime.

PRESETS

Factory presets are named for the job, not the setting — pick the one that describes your source, then adjust by ear. Any change you make can be stored as a USER preset with + Save.

Vocals — Lead Vocal Smooth · Vocal Ride Gentle · VO Broadcast · Rap Vocal Level · RnB Vocal Silk · Pop Vocal Control · BGV Blend · Parallel Vocal Thick · Aggressive Vocal Squeeze · Podcast Leveler

Drums — Drum Bus Warmth · Room Mic Level · Kick Sustain · Snare Body

Bass and low end — Bass Warm Hold · 808 Even Level · Sub Bass Glue · Warm Bass Thick

Guitars and keys — Acoustic Gtr Silk · Piano Glue · Electric Gtr Sustain · Synth Pad Smooth · Guitar Bus Glue · Strings Smooth · Brass Control

Bus and utility — Init · Parallel Warmth · Catch Peaks Only · Master Bus Glue · Master Gentle Level · Full Mix Cohesion · Tame Dynamics Hard

CALIBRATION AND LEVEL

Like every Essentials unit, EA-2A is built around the analog convention **0 VU = -18 dBFS**. Feed it a signal whose average sits around -18 dBFS and every default, every preset and every meter reading lands where it was voiced to.

An optical leveler has no threshold knob: Peak Reduction sets how deep the cell sits relative to the incoming level, so a track that hits the unit 6 dB hot is 6 dB deeper into leveling at the same setting. Use the Cal trim on the rear panel to re-centre the 0 VU reference if your chain runs hot or cold, and read GR on the VU while you set Peak Reduction. With Auto Makeup on, the OUT reading stays close to the input level as you work.

LATENCY

EA-2A reports its latency to the host — a few samples of oversampler group delay around the tube stage, constant regardless of settings — and the DAW compensates automatically. Delta and Mix are always time-aligned to the dry signal, so a parallel blend never combs.

TIPS

- Set Peak Reduction until the VU shows 3–5 dB of GR on the loudest phrases, then set Gain until Matched Bypass sounds level. That is the whole vocal move.
- For a lead vocal, raise Emphasis to 45–55 so the cell reacts to sibilance and top-end energy — it levels the bright bits first without a separate de-esser.
- Bass and 808s: drop Emphasis to 5–10 and raise SC HPF to 35–45 Hz so the sub does not drive the cell — you get hold without the low end pumping.
- Parallel thickness: Peak Reduction 70, Gain 20, Mix 40–45 %. The squashed path sits under the dry one and only the body gets denser.
- Flip to LIMIT for broadcast or podcast work when peaks, not tone, are the problem; use DELTA to confirm it is only catching the spikes.

Echelon Audio · EA-2A · drag a knob to adjust, Shift-drag for fine control, double-click to reset, right-click or double-click a value to type it.
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