

VU Meter

ANALOG VU METER · AU + VST3 · macOS

ZEROPINK

USER MANUAL

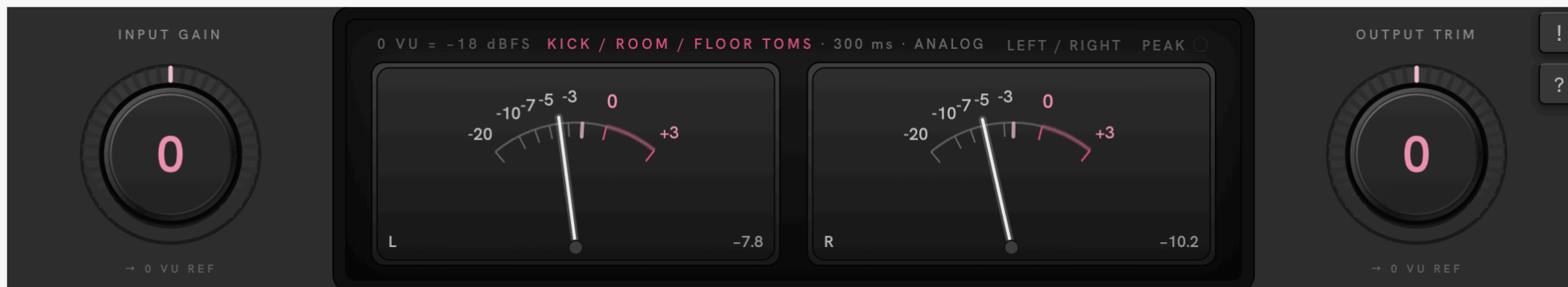


A real 300 ms VU pair, calibrated to 0 VU = -18 dBFS. It does not process. It tells you where you are before anything else gets a say.

We all want the perfect mix.

Why a needle, in 2026

01



Your DAW's meters show you peaks. Peaks tell you whether you are about to clip. They tell you almost nothing about how loud something sounds, or how much of the signal is actually there.

A VU meter averages over roughly 300 milliseconds — close enough to how the ear integrates loudness that the needle position and your perception agree. That is the entire reason the format survived seventy years and why every piece of analogue equipment you admire was designed around it.

The number that matters is **0 VU = -18 dBFS**. That is the level analogue circuits expect at their input — the point where a transformer, a tube or an optical cell behaves the way its designer intended. Feed them 15 dB hotter, as most modern sessions do by default, and they do not sound "driven": they sound wrong, and no amount of knob-twisting recovers it.

This plugin exists to make that one number visible, everywhere in your session, in the same units on every channel.

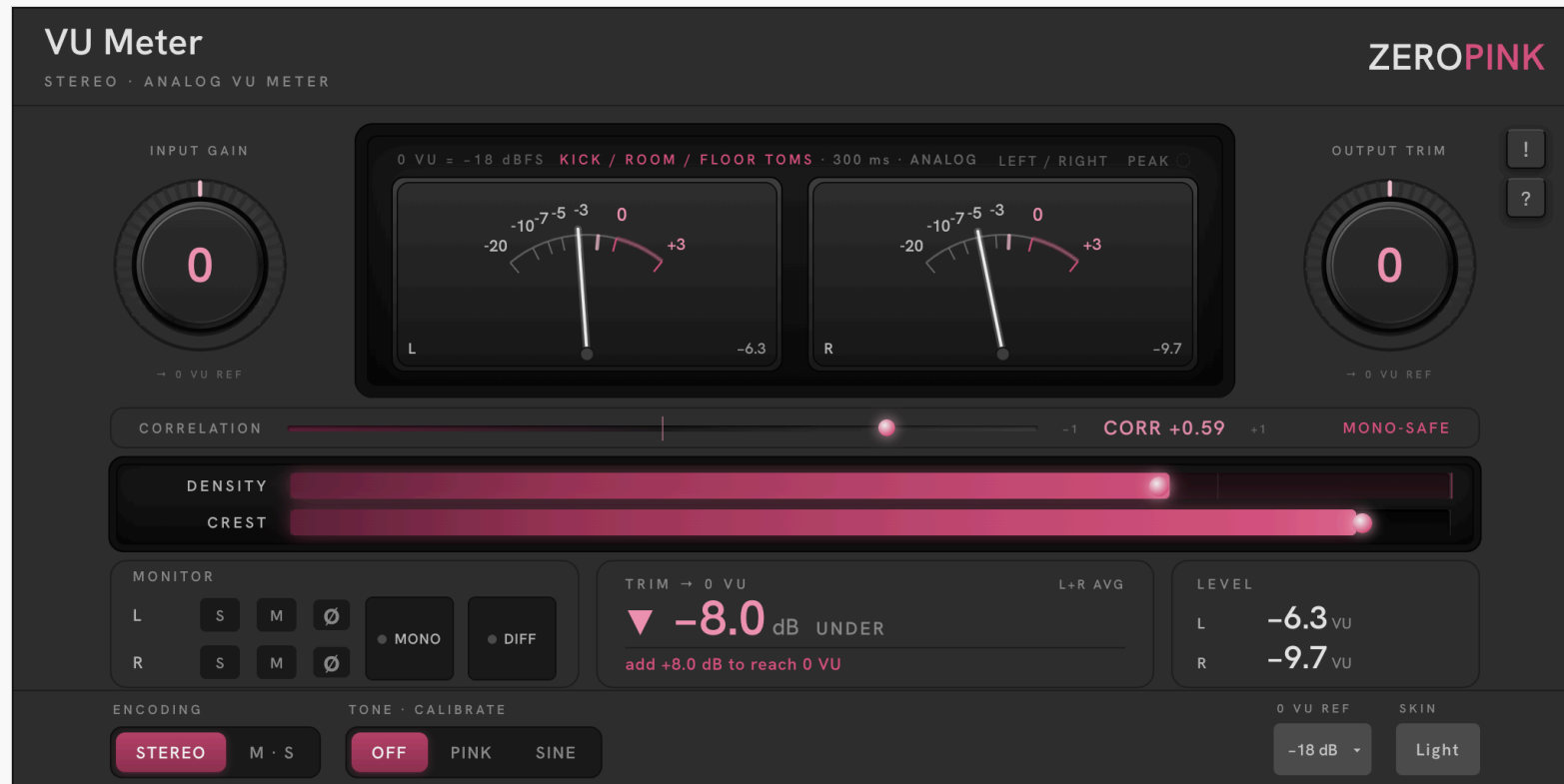
PEAK VS AVERAGE

A snare hit and a sustained bass note can share an identical peak reading and differ by 15 dB on the needle. The peak meter says they are the same. Your ears, and the VU, both say they are not.

The small pink pip that hangs above each needle is the peak-hold marker. It shows the loudest recent excursion so you can see the headroom the needle is smoothing away — the average and the transient in one glance.

The face, top to bottom

02



THE METERS

Two needles with a gain knob under each — INPUT GAIN on the left, OUTPUT TRIM on the right. Between them, the calibration line that tells you what 0 VU currently means.

CORRELATION

A single strip from -1 to +1 with a verdict at the right: MONO-SAFE, WIDE or MONO RISK. Phase trouble, before it reaches a mastering engineer.

DENSITY · CREST

Two scaled strips with a pink ideal zone marked on each. How full the signal is, and how much transient is left above the average.

MONITOR · TRIM · LEVEL

Three cards. What you are listening to, the exact move to reach 0 VU, and the two channel readings as numbers.

Trim to zero — the only workflow

03

The TRIM → 0 VU card does the arithmetic for you. It reads the average of both needles, compares it to 0 VU and prints the exact move in dB — add or subtract, with the direction spelled out. No mental conversion, no guessing.

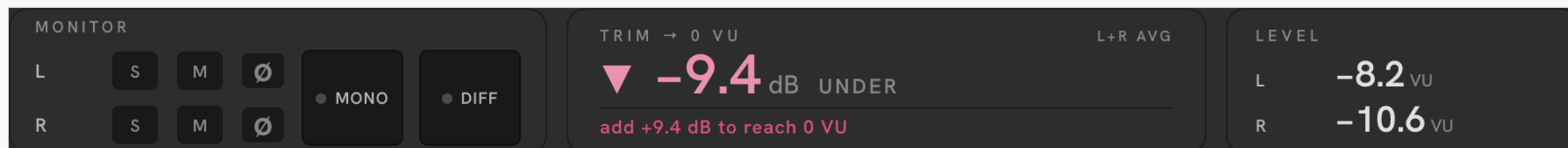
1. Play the loudest sustained section of the part — not a fill, not an intro.
2. Read the card. It says UNDER, ON TARGET or HOT, and by how much.
3. Apply that move **at source** — clip gain, region gain, or the recording level.
This is the better fix: correct it once and every plugin downstream inherits a sane starting point.
4. Use INPUT GAIN on the plugin for the last dB or two, and for deliberately driving something harder.

THE ZERO DETENT

Both knobs run ± 24 dB and snap to unity. The engraved 0 at the centre stays lit — it is the brand's argument in one control. Drag to set, double-click to return to zero. The pink arc grows from 12 o'clock, so at unity there is nothing lit and no move to undo.

The LEVEL card carries the two channel readings as exact numbers. The needles are for the glance; these are for when you need the value. Both track the same data, so they never disagree.

OUTPUT TRIM exists so a bypass comparison stays honest. If you have driven the input up, bring the output back down by the same amount — then A/B tells you about tone, not about loudness.



0 VU REF — the staging ladder

–18 dBFS is the reference. The other four settings are not alternatives to it — they are a **staging ladder** for a drum kit, stepping 3 dB per element.

That descent is the pink –3 dB/oct tilt made practical. Low elements aim high on the dial, high elements aim low, so staging each mic to its own reference pre-distributes the kit along the pink contour before you touch an EQ.

The calibration line above the needles names the selected element, so the menu teaches rather than just setting a number.

IN PRACTICE

Stage the kick to 0 VU at –18. Stage the cymbals to 0 VU at –30. Both needles read zero; the cymbals sit 12 dB lower in the mix. That is a balanced kit before the first fader move.

0 VU REF	ELEMENT
–18 dB REFERENCE	Kick / Room / Floor toms
–21 dB	Rack tom
–24 dB	Snare
–27 dB	Hi-hat / Ride
–30 dB	Cymbals

For anything that is not a drum kit — a mix bus, a vocal, a synth — leave it at –18 and ignore the ladder entirely.

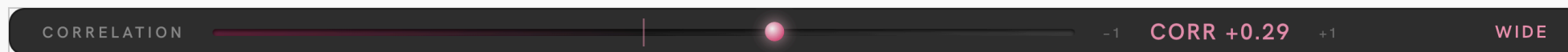
The ladder is a starting point, not a rule. It gets the kit into a sane relationship in one pass, which is far quicker than balancing eleven faders from silence. Adjust from there by ear — but adjust from something that already makes sense.

WHY 3 dB PER STEP

Pink noise falls 3 dB for every octave you climb. A kick lives around 60 Hz, a hi-hat several octaves above — so a kit staged on a flat reference arrives with too much energy at the top. Stepping down 3 dB per element applies the tilt at the gain stage, where it costs nothing, rather than at an EQ later, where it costs phase.

Phase: warn, then listen

05



Correlation measures how much the two channels agree. **+1** means identical — mono. **0** means unrelated, which is normal for a wide stereo mix. **-1** means inverted, and it will vanish the moment anyone sums to mono.

The verdict at the right of the strip reads MONO-SAFE, WIDE or MONO RISK. Sustained MONO RISK on a full mix means something is fighting itself — usually a doubled part, an over-eager stereo widener, or two mics on the same source.

Then the MONITOR card lets you hear it. This is the part most meters leave out.

Correlation is not a score to maximise. A mix pinned at +1 is mono, and a mix that never leaves 0 may be wide to the point of having no centre. What you are watching for is the excursion into negative territory, and how long it stays there.

Brief dips below zero are normal and inaudible — a cymbal decay, a wide reverb tail. A sustained stay in the negative on material that should be solid, like a bass or a kick, is the one that costs you: it means the low end is partially cancelling itself, and it will collapse further the moment anything sums.

WARN → SUM → DIFFERENCE

CORRELATION flags the problem. **MONO** auditions the sum, $L + R$ — what a phone speaker or a club system actually plays. **DIFF** auditions the difference, $L - R$ — precisely the content that a mono fold cancels.

If DIFF is loud and full of something you care about, that something disappears in mono. Now you know what to fix, not just that something is wrong.

MONO and DIFF are mutually exclusive — you cannot audition the sum and the difference at once. Both off returns to normal monitoring.

S / M / Ø per channel are check aids on the monitor path only: solo, mute, and polarity flip. None of them touch the signal you print. Switch **ENCODING** to **M·S** and the same controls operate on mid and side instead of left and right.

The polarity flip earns its place on multi-miked sources. Put an instance on a snare pair, flip the bottom mic, and watch correlation swing from negative to positive — that is the phase relationship becoming correct, measured rather than guessed.

Nothing here is destructive. Every one of these controls exists so you can interrogate the signal and then leave it exactly as you found it.

Density and crest

06



DENSITY • 0-100

How continuously the signal fills the time available. A sparse, gappy performance reads low; a dense, sustained one reads high. The pink zone marks **70-100**, where a mix feels full rather than thin.

Density is a Fill read, and the tools that write it are Saturation and Density. Here it is diagnostic only — it tells you whether the part needs more body before you reach for anything.

READ THEM TOGETHER

High density with low crest is a limited, flat master — full but lifeless. Low density with high crest is a sparse, dynamic performance that may simply need more parts rather than more processing. Both strips in their zones at once is the target, and it is a genuinely different destination from "loud".

CREST • 0-20 dB

The gap between true peak and RMS — how much transient is still standing above the average. This is the number a needle physically cannot show you, which is exactly why it earns a strip of its own.

The pink zone marks **10-14 dB** — mastered, but still breathing. Below 8 dB the transients are gone and the material is crushed. Between 14 and 20 dB it is genuinely dynamic, which is correct for jazz, orchestral material and for most individual tracks.

Watch crest fall as you add compression. When it drops out of the zone you have spent the punch — and no later stage gives it back.

WHY CREST IS NOT ON THE NEEDLE

The needle averages over 300 ms by design — that is what makes it agree with your ears. But averaging is exactly what hides a transient. Crest is measured from true sample peak against RMS, so it sees what the needle is smoothing away. Two reads, two jobs, one signal.

This is also why a mix can sit at 0 VU and still clip: the needle reports the average, while the peaks it is averaging can be 15 dB higher. Crest is the number that tells you how far above the needle the signal actually reaches.



Four controls, none of which change your audio. The footer is where the meter is configured rather than operated — set these once per session and forget them.

ENCODING

STEREO reads left and right. **M·S** reads mid and side, so the left needle shows the centre of your mix and the right shows the width.

M·S on a master is the fastest way to see whether the width is carrying real content or just reverb.

TONE · CALIBRATE

SINE emits a tone at exactly 0 VU. The needle should land on zero — if it does not, your gain structure is lying to you somewhere upstream.

PINK emits pink noise for room and monitor calibration: set your monitor so -18 dBFS reads about 83 dB SPL.

0 VU REF

The staging ladder from the previous page. -18 dBFS is the reference; the rest step 3 dB per drum element. The calibration line above the needles always names what is selected.

SKIN

Dark graphite or light satin metal. Both are the same panel at the same resolution — only the chassis value changes. The glass, the needles and the pink carry over untouched.

The ! cap at the top right latches hover-help on. ? opens this manual.

CALIBRATING YOUR ROOM, ONCE

Play PINK, put an SPL meter at the listening position on C-weighted slow, and set your monitor controller so it reads about 83 dB. Do this once and write the position down. From then on your loudness judgements are repeatable between sessions, and the mixes you make quietly still translate.

83 dB is not a comfort setting — it is the level at which your ears hear the frequency spectrum most evenly. Mix much quieter and you will over-compensate the bass; much louder and you will under-do it, then wonder why the mix falls apart on small speakers.

WHY THE TONE MATTERS MORE THAN IT LOOKS

SINE at 0 VU is a self-test for the whole signal path. Drop the plugin on a channel, play the tone, and the needle should sit dead on zero. If it does not, something between the two is changing level — and every level decision you have made in that session inherits the same error.

It is a thirty-second check that catches a class of problem you would otherwise chase for an afternoon.

Where to put it

08

FIRST IN THE CHAIN

The most useful position. Trim to 0 VU here and everything downstream — compressor, saturator, EQ — receives the level it was designed for. One instance at the top of a channel does more for your mix than any plugin further down.

On a drum kit, set 0 VU REF per element and stage each mic to zero. The kit arrives balanced.

If you only ever use this plugin in one place, use it here. Everything downstream inherits the decision.

ON EVERY BUS

Drums, bass, guitars, vocals — one instance per bus, all reading the same reference. Now "the vocal is too quiet" becomes a number you can see rather than an argument, and the relationships between busses stay stable when you come back to the session a week later.

It sounds excessive. In practice it is the difference between mixing and guessing — and the meters cost nothing to read.

ON THE MIX BUS

Leave 0 VU REF at -18 and watch three things: the needles for level, correlation for phase, crest for whether you still have transients. Check MONO before you send anything anywhere.

Switch to M·S occasionally. If the side needle is close to the mid, the mix is wider than it sounds — and mono will hollow it out.

Crest is the one to watch as the mix fills up: it falls quietly, and once it is gone no later stage returns it.

IT DOES NOT PROCESS

Apart from the two gain trims and the reference tone, nothing here alters your audio. Solo, mute, polarity, MONO and DIFF all act on the monitor path only — they change what you hear, never what you print. Leave one soloed by accident and your bounce is still correct.

That is deliberate. A meter you have to remember to disarm is a meter you eventually ship a mistake through.

BEFORE AND AFTER

Two instances, either side of a processor, both at -18. Now you can see exactly what that processor did to your level and your crest, in the same units, instead of guessing whether it got louder or better.

This is the cheapest honesty check in mixing, and the one most often skipped.

Match the two readings before you judge the processor. Otherwise you are comparing loudness, not tone — and louder always wins.

WHILE TRACKING

Zero latency, so it is safe to leave on a record path. Set the preamp so the needle rides 0 VU with the peaks staying below the pink zone and you have captured the take at the level the rest of the chain wants, without touching it again.

Watch the peak-hold pip here: it catches the one loud syllable the needle averages away.

Ballistics	300 ms integration, true VU
Reference	0 VU = -18 dBFS (default)
0 VU REF range	-18 / -21 / -24 / -27 / -30 dBFS
Scale	-20 to +3 VU, pink over-0 zone
Gain trims	±24 dB, zero detent, double-click to reset
Encoding	Stereo (L/R) or Mid/Side
Correlation	-1 to +1, three-state verdict
Density	0-100, ideal 70-100
Crest	0-20 dB peak-to-RMS, ideal 10-14 dB
Latency	Zero — no oversampling, no lookahead
Panel	1024 × 512 px, fixed
Formats	AU · VST3 · macOS 11+
Network	None. Works offline, forever

THE ZEROPINK MARK

Clicking it opens zeropink.net in your browser — the only thing here that ever reaches the internet. The plugin itself never contacts a server.

THE NEEDLE SITS AT -20 AND WILL NOT MOVE

Your source is far below reference. Check that the channel is actually playing, then apply the move the TRIM card prints — most likely +15 dB or more, which is normal for quiet ribbon or room mics.

THE NEEDLE IS PINNED ABOVE 0

Your session runs hot — the usual case, not a fault. Reduce at source with clip gain rather than pulling INPUT GAIN down by 15 dB, so the rest of the chain inherits the fix.

SINE TONE DOES NOT READ 0

Something between the plugin and the meter is changing level — a trim, a fader in the wrong place, or a plugin with unity gain that is not actually unity. Worth finding: it means every level judgement in the session is off by that amount.

CREST READS VERY HIGH

Above 20 dB usually means solo percussion or a part that has not been levelled yet. On a finished mix it means almost no compression — which may be exactly what you wanted.

CORRELATION SITS AT EXACTLY +1

The two channels are identical — the source is mono, or a dual-mono plugin upstream has collapsed it. Fine on a bass or a lead vocal; worth investigating on anything you expected to be stereo.

THE NEEDLES DO NOT MOVE AT ALL

In a host, the plugin is not receiving audio — check the channel is not muted and the plugin sits after the source, not before it. Opened standalone, the panel runs its own demo animation until real meter data arrives.