INDEPENDENT AUDIO SOFTWARE

LYNCH Master Limiter

Bring the peaks into the picture.



Shape Tube and Tape colour before a lookahead peak-control stage. Choose the limiting response, refine release and stereo link and use Intersample Aware as a reconstruction-informed detector option, without treating it as external certification.

Complete colour user guide · version 0.2.0 · Apple Silicon Mac AU · macOS 12+

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Start with the part

Shape Tube and Tape colour before a lookahead peak-control stage. Choose the limiting response, refine release and stereo link and use Intersample Aware as a reconstruction-informed detector option, without treating it as external certification.

01 / Input then Tube then Tape then Output then lookahead Limiter then wet mix then Bypass.

02 / Init disables Tube, Tape, Limiter and Noise and passes the exact delayed input.

03 / Drive increases excitation through an asymmetric soft stage with level-dependent sag/recovery.

04 / A separate saturating flux-memory path and high-frequency-loss contour.

Inside the sound

Chain

Input then Tube then Tape then Output then lookahead Limiter then wet mix then Bypass.

Starting

Init disables Tube, Tape, Limiter and Noise and passes the exact delayed input.

Tube

Drive increases excitation through an asymmetric soft stage with level-dependent sag/recovery.

Tape

A separate saturating flux-memory path and high-frequency-loss contour.

Limiting

A stereo-linked max-filter/clipping-control envelope anticipates peaks before they reach the output.

Latency

Audio always reports608 samples:96 samples for oversampling alignment plus512 samples of lookahead.

Sound and approach

An original stereo mastering limiter with independently switchable Tube and Tape color stages, followed by real lookahead peak control. These are musical analog-inspired algorithms, not measured replicas of a particular unit.

Chain

Input then Tube then Tape then Output then lookahead Limiter then wet mix then Bypass. Optional vintage noise enters before Output/limiting. Tube and Tape can both be on; Tube always precedes Tape. Output is before limiting so it pushes into the chosen ceiling. The limiter is not an ordinary saturator renamed as a limiter.

Starting

Init disables Tube, Tape, Limiter and Noise and passes the exact delayed input. Enable Limiter for peak control or select a grouped starting preset. Input and Output add level; lower Ceiling sets a stricter output sample bound. Drive and fast timing can create deliberate heavy coloration. No forced loudness target or automatic gain matching is applied.

Tube

Drive increases excitation through an asymmetric soft stage with level-dependent sag/recovery. Bias changes the asymmetry and harmonic balance. Tube saturation is processed at8x at44.1/48kHz and4x at88.2/96/192kHz. The Tube readout estimates instantaneous nonlinear transfer compression; it is not the final limiter GR.

Tape

A separate saturating flux-memory path and high-frequency-loss contour. Drive sets magnetic excitation and density; Tone adjusts the high-frequency loss from dark to open. It is an original reduced tape-inspired effect, not a measured magnetic tape or tape-machine simulation. It uses the same oversampled path.

Limiting

A stereo-linked max-filter/clipping-control envelope anticipates peaks before they reach the output. Attack/Release are nominal time controls; Clean, Glue and Crush shape their actual response differently. Clean favors controlled recovery, Glue is slower and more program-dependent, and Crush uses faster timing. Program Release increases recovery time after heavier sustained reduction. Stereo Link100% applies equal gain to both channels; lower values permit more independent reduction and can move the image.

Intersample Aware adds an eight-phase129-tap-per-phase sinc reconstruction estimate to the detector, with0.35dB additional detector headroom. In this mode the active audio also passes through the bandlimited oversampling FIR, even when Tube/Tape are off. Measured small-signal gain differs by at most0.072dB from 20Hz to20kHz across the five tested rates, with aligned linear phase. Its64-sample

analysis delay is accounted for inside the fixed lookahead. It reduces peaks between samples and has been tested against a separate reconstruction reference. This is not a claim of certified true-peak compliance on every possible signal. The control remains labeled Sample Ceiling. A downstream reconstruction filter, conversion, lossy codec or further processing can alter peaks.

The sample-ceiling bound applies when Limiter is on and Wet Mix is100%. Lower Wet Mix reintroduces unlimited dry audio. Mix0 and Bypass reproduce the exact delayed input, including its original peaks. Ceiling and other sound controls smooth during automation. A final sample guard handles numerical/automation overshoot and has its own protection meter; severe activation can be audible.

Latency

Audio always reports608 samples:96 samples for oversampling alignment plus512 samples of lookahead. Active oversampled audio can have small pre-ringing before the impulse maximum at608; the declared value is its group delay. Init with all processing off, global Mix0 and Bypass retain the exact608-sample delayed raw signal. This is about13.79ms at44.1k,12.67ms at48k,6.89ms at88.2k, 6.33ms at96k and3.17ms at192k. Fixed PDC avoids latency jumps when modules change. Mix0/Bypass have the same delay. Intersample analysis uses part of the existing lookahead and does not add latency.

Vintage Noise

Noise is optional and defaults Off. Choose Tape, Valve or Cassette and set its approximate RMS level in dBFS. Input above-90dBFS arms it; after silence it holds for6 seconds and fades over2 seconds. Cold silence produces no hiss, even if Noise is enabled. The conservative host tail is9 seconds including delay. Noise is deterministic after reset for reproducible renders and tests.

Meters And Presets

Input/outputRMS and held sample peak describe actual audio. Tube/Tape readouts show color-stage transfer compression; Limiter GR shows applied envelope gain. Their sum is a useful activity indication, not a loudness or dBTP measurement. Presets are curated starting points, including deliberately aggressive and parallel examples. Global Mix and Bypass retain their documented dry behavior. Every sound control is automatable; ? explains controls and Guide is integrated.

Published context: Hamalainen, DAFx2002, Smoothing of the Control Signal without Clipped Output in Digital Peak Limiters; ITU-R BS.1770-5 Annex2 discusses why sample peaks differ from reconstructed peaks. Original implementation, no vendor DSP or audio samples. Actual Logic-session listening remains Robin's QA.

Install and choose the right host slot

Apple Silicon Mac, macOS 12 or later. Audio Unit only; no Intel Mac, Windows, VST3 or standalone application is included. Use an AU-compatible host and insert on an audio track, instrument audio output or bus.

Save your session before installation. Use the verified current installer and follow its installation prompts, then restart the host if the newly installed AU is not listed. Select the product under Lynch Audio Lab in the appropriate slot.

Trial and permanent licensing

Download the trial installer shown on the product page; the same installer is used for trial and purchase. No card is needed for the trial.

Open the plug-in, click Trial & Activation at the bottom and press Start trial to begin its full 14 days. Installing, opening a preset or downloading a guide does not start a new trial. Each product has its own trial. There is no subscription, automatic charge or periodic noise burst.

For a permanent purchase, use the exact Buy link on the product page. Lemon Squeezy supplies a license key in the receipt. Connect this Mac to the internet, click Trial & Activation at the bottom, paste the receipt key for this exact product and choose Activate. A permanent license allows a maximum of three computers. After successful activation, work offline.

To free a Mac’s activation, connect it to the internet, open Trial & Activation and choose Deactivate this Mac. This releases that computer without renewing or resetting trial dates. Presets, project settings and updates do not renew the trial and retain settings.

The login Keychain stores trial and license-key records separately from presets. If it is locked, unlock it normally and press Refresh in Trial & Activation. Keep the system date correct.

At expiry, audio effects return latency-aligned dry audio with normal reported latency; instruments are silent; MIDI tools stop output and release held notes. Presets and project settings remain. Purchase activation restores licensed processing rather than a new trial.

Save, recall and automate

Save the host project to retain the AU instance. Use the product-specific preset operations described in the control chapters for reusable sounds. Preset files, complete project state and controller assignments can have different scopes; do not treat them as interchangeable.

When using host automation, choose an exposed sound parameter, record a short test pass and replay from before the first change. Check module enables, routing and output level. Only use product-local MIDI Learn when this manual explicitly documents it; otherwise use the host’s controller-assignment workflow.

Troubleshooting and support

If the AU is missing, save your session, install the current package and restart the AU-compatible host. Check the required macOS version and Apple Silicon architecture, then review the host's plug-in manager. Do not delete a working production project to troubleshoot an insert.

For no sound or no processing, first check the correct slot, track input/output, incoming audio or MIDI, bypass/mute, module enables, mix/return amounts and trial or activation status. Test a simple documented starting point before adding a complex chain.

If the sound is too loud or distorted, reduce drive or output and inspect later inserts and the host master. Sample-peak protection does not guarantee intersample peaks. Source clipping cannot be repaired simply by lowering a later trim.

For dropouts, reduce active polyphony, unison, long returns or dense processing where applicable, or use the host's freeze/bounce workflow. A larger buffer can help scheduling; it cannot cure sustained processing overload.

For activation trouble, check the internet connection and use the key for this exact product from the Lemon Squeezy receipt. For help, contact info@lynchaudiolab.com with product version, macOS version, AU host and a short description. Never send your private license key publicly.

About this guide

Lynch Audio Lab · Music records a brighter tomorrow. This guide describes the released Audio Unit package. The control chapters preserve the supplied public operating documentation, with current-operation addenda integrated and obsolete private-test release labels removed. Images show the real product interface; some original panel lettering may predate the current package version. Original TXT documentation remains available separately.

Original Lynch designs are not measured hardware replicas or equipment-maker endorsements. Listen in context, maintain headroom and check the final deliverable after downstream processing. Support: info@lynchaudiolab.com.