

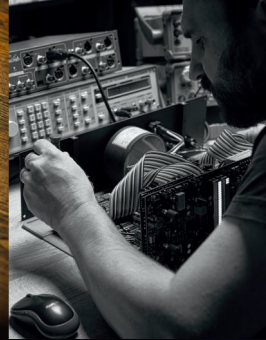


# JAAL

## Look Ahead Analog Limiter with Dynamic Transient™



It changes everything...  
Carefully handcrafted in Poland.



**WE  
BUILD  
THE  
SOUND**

## The missing link in analog mastering chain.

Designed and made by experienced sound engineers, for the most demanding mastering tasks.

Yes, finally it happened! Over 2 years of the most advanced development we ever did in HUM Audio Devices lab resulted in the creation of the limiter that many mastering engineers have always dreamed of, but never had.

The time, when you were forced to compromise your excellent analog mastering process with digital or plugin limiters is finally ended.



Front panel

Our LAAL mastering limiter is absolutely exceptional in many ways. An innovative idea of detection and limiting process allowed us to achieve a new standard in analog mastering.

One of the strongest advantages of our design is a fully analog (0.2 ms) delay line to obtain the "Look Ahead" ability.

Thanks to it the detection circuit can react to even the fastest peaks. LAAL is extremely effective in this task, allowing you to reach great RMS levels when required, but with minimal side effects and without compromising sound quality. Your track will also preserve low-end energy and punch in a wide gain attenuation range.

LAAL does not use any soft clipping or similar process to artificially increase RMS levels. All magic happens in our unique and sophisticated detection and gain stage circuits.

LAAL takes maximum care about the quality of your master.

When you look at the waveform after LAAL processing - you will find your master still „lives” and has an „air” above!



Rear panel



Another extraordinary and absolute unique feature of our limiter is the DYNAMIC TRANSIENT function.

This function is responsible for regenerating transients proportionally to the limiting level.

It plays a major role in preserving space and details in your sound as you intend.

Large 40-element bar meters with peak hold function give you very precise (up to 0.2 dB) gain reduction and input level indication.

The final addition is the STEREO WIDTH circuit which works differently and in a more musical way compared to similar processors. You will perceive a nice increase in the spaciousness of your tracks, but you won't lose low-end energy in the centre of the stereo image, and it's also fully mono compatible.

LAAL is very precisely calibrated with better than 0.1dB accuracy in L/R channels, and it keeps the output level exactly.

The detection circuit is thermally compensated which ensures stability and repeatability of results in all studio conditions.

You can set input/output levels with a resolution of 0.2dB as well as six different release times, from 2ms to 100ms.

All these settings are on rotary switches, as you expect from mastering equipment. Left and Right channels detection circuits are stereo linkable. You can also use LAAL as two independent mono limiters if you wish.



Calibration procedure in HUM Audio Devices Lab

In practice, LAAL delivers extremely clear, vital, deep and musical sound with lots of details, for the most demanding mastering tasks. We spent countless hours in our lab and studio with many music genre tracks to ensure LAAL does its best on each limiting task you will potentially have in your everyday work. No matter if it's audiophile acoustic music where you need just a subtle touch or if you need to do heavier brick-wall limiting in modern music genres. You can always use your LAAL limiter with confidence.

To reach this extreme quality - we designed our own discrete opamps and used the best possible transistors, polystyrene capacitors, military spec resistors, top audio transformers and gold plated rotary and relay switches.

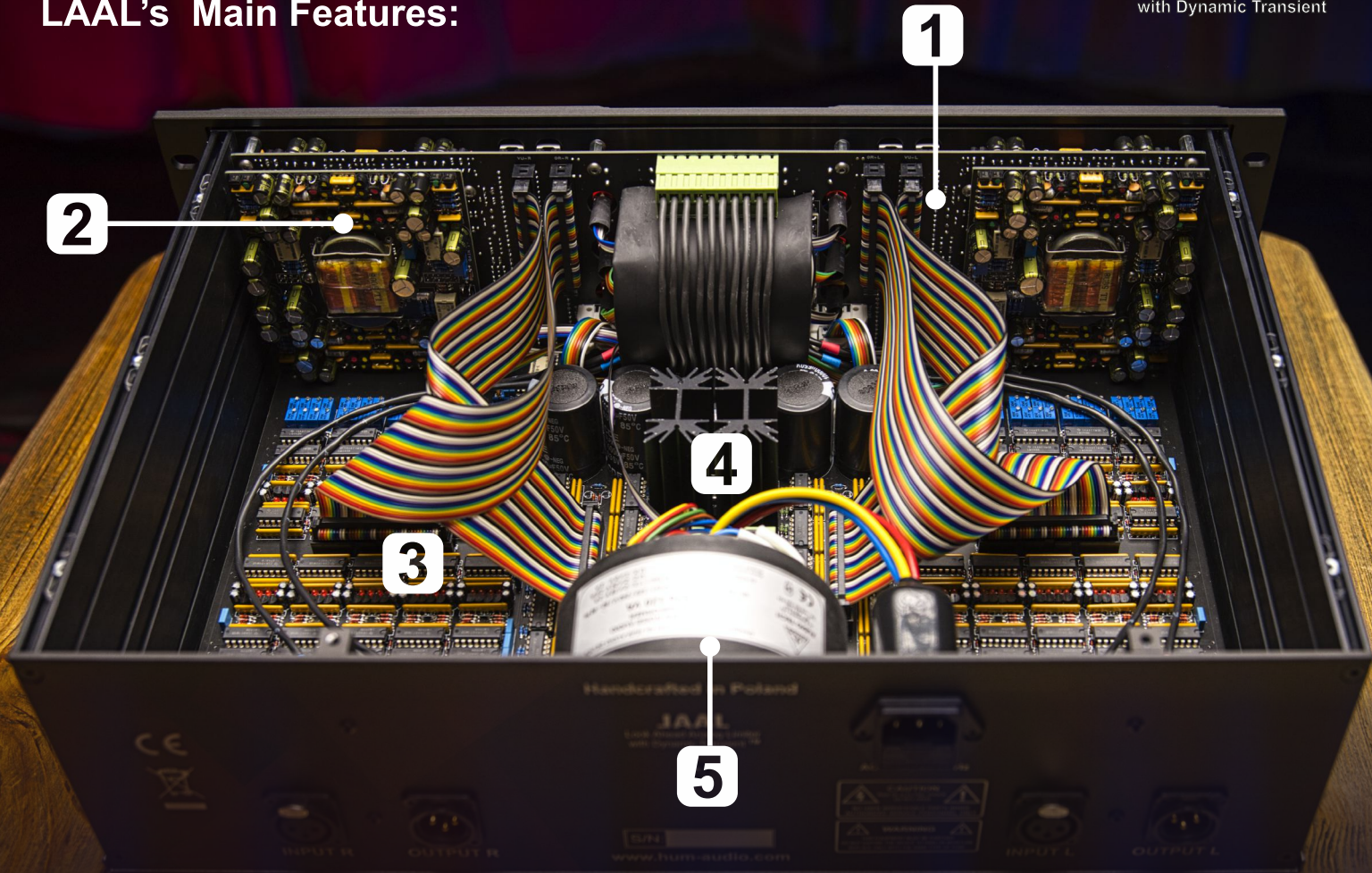


Power module with custom built transformer

We took maximum care to choose every single component in LAAL audio path for sound quality, noise free performance and musicality. There is no smallest compromise anywhere.

We also developed the ultra-stable, classic linear power supply. LAAL is equipped with an audiophile grade custom toroidal power transformer with a large reserve of power.

It is double shielded and works as a power conditioner, ensuring big headroom and very clean power required for the most critical mastering tasks.

**LAAL's Main Features:**

- 1** Main Audio and Meter Board.
- 2** Analog Delay Line Boards
- 3** Thermally compensated Detection / PSU Board
- 4** Ultra Linear Power Supply
- 5** Custom double shielded Toroidal Power Transformer

- All discrete audio signal path
- Very high headroom (+/-24V int. powering)
- Highest quality audio transformers
- Ultra stable linear power supply
- Thermal compensation for the ultra-precise detection circuit
- Analog LOOK AHEAD circuit (0.2 ms analog delay line)
- Variable STEREO WIDTH function
- DYNAMIC TRANSIENT function
- Variable Release Time (stepped, from 2ms to 100ms)
- Precise led metering (0.2 dB steps)
- Precise input/output setting (0.2dB steps)
- Peak Hold function for gain reduction meters
- Rotary step switches for all knobs
- Stereo link for detection
- Limiter Bypass
- Hard Bypass
- Custom made shielded AC cord



- Self Noise A-weighted: -102 dB (at 0dB IN/OUT setting)
- THD+N absolute: 0.026% (1V RMS, 1 kHz at max gain reduction)
- Frequency Response: 20Hz - 30kHz (+/- 0.3dB)
- Max Input Level: +22dBV
- Max Output Level: +28dBV
- Input XLR balanced, impedance 10K Ohm
- Output XLR balanced, impedance 75 Ohm
- AC Powering (internally switchable 240V/120V) 50/60Hz
- Power Consumption: max. 70 Watt
- Weight: 9.4kg (11.6kg shipping)
- Dimensions: Rack 19" 3U:  
WxDxH: 484 x 314 x 133mm (LAAL itself)  
600 x 400 x 250mm (shipping box)
- Package contains:  
LAAL limiter  
Custom shielded AC cord.



To sum everything up:

Our goal was to reach the best possible sound quality together with exceptional practical functionality and reliability. We are sure we reached this goal with full success.

**Feel free and happy, as a true Unhindered Maker!**

Create your next masterpiece without compromise, with vital and full-of-life sound. Together with your new LAAL mastering limiter. Your hard mastering work deserves that.

Your HUM Audio Devices team.



For more info and demoing please contact us or our authorized distributors. Check distributors list on our website.

[www.hum-audio.com](http://www.hum-audio.com)



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email: [info@hum-audio.com](mailto:info@hum-audio.com)