



KA1776 Limiting Amplifier

user manual KLA 1.0

KORNEFF
the other side of sound



KA 1776 Limiting Amplifier

Aren't there enough of these out there in the world? 1176's? 1073's? LA-2a's? EQP-1A's? DM-200's? I made that last one up, but you get the point.

Why are we making yet another FET-based feedback design limiter with big input and output knobs, attack and release controls that are backwards (turn counterclockwise to slow things down) and push-button ratio controls that can also be all pressed down at the same time to blow the thing up?

Do we need another version of one of the most distinctive, iconic pieces of audio equipment ever made, renowned for its capabilities and distinctive, saturated tone that you can hear on just about every record made since 1967?

Why is Korneff Audio, known for perfecting emulations of rarities like the Shure Level-Loc and the SITRAL Klangfilter 295, and their own unique creations like the Pawn Shop Comp, the Amplified Instrument Processor and the Chocolate Milk, suddenly making the audio equivalent of an Oreo Cookie?

Because Oreos are freekin' delicious. Because we overstuffed ours with TWO times as much goodness. Because we got tired of using everyone else's and thought, why not make our own? And because "1176" reminded Dan of "1776" and what could be more American than THE MOST ICONIC AMERICAN LIMITER THERE IS?

Happy 250th Birthday, USA. Apple Pie! Baseball! Mom! Fireworks! Oreo Cookies! The KA1176 Limiting Amplifier!

What's in it for you?

The KA1176 is two component-level modeled FET limiters in one. Use it in stereo, dual mono, or serial—feed one into the other. There's British Mode (yes, there was a war, but all is forgiven, and for some reason, British Mode is what ya call pushing all four ratio buttons down at the same time), and a special saturation-only mode that removes the limiting/compressing action and turns it into an FET saturator. This too is British-inspired—a major English band named after a blimp used two of these units in series to get a guitar sound on a song about a dog.



Make the left side of the bus saturate; the right side compress. Or compress first, then saturate. Or smooth a track out with fast limiting followed by slow gentle compression. Or use it Mid-Side to crush the middle and crunch the sides.

Smash drums, precisely contain vocals, punch up a mix, grit up a keyboard pad, do very strange things to a stereo reverb return, turn it into a guitar amp. Check things out with the analyzer. Clean things up with the pass filters. The KA1776 even has external keying.

Needless to say, ours sounds like the real deal. We modeled it on Dan Korneff's favorite unit, the one he used on a bunch of great-sounding, well-known records, that he custom-tweaked with a soldering iron across years of recording.

What's in the Oreo?

The essence of the '76 is a Field Effect Transistor. The FET is low noise and when it's overdriven it has a relatively pleasant sound—it adds mainly even order harmonic distortion, somewhat like a tube. But it is also able to respond to control signals very quickly, much quicker than a tube. Which is why the legendary engineer Bill Putnam redesigned his 176 tube limiter using an FET. The result, the 1176, had tremendously upgunned performance compared to the 176, and, critically, it was much cheaper to make. Consequently, it took the audio world by storm. Without exaggeration, you can say that there's a '76 on just about every record you've ever heard. And of course, there are now a ton of plug-in versions as well.

If our KA 1776 is your first, then you have FABULOUS TASTE!

What's in the code?

We component level model our plug-ins. What that means is that we come up with equations to describe the action of every resistor, capacitor, transformer, transistor and whatever else in the circuit, and add all those equations together into one HUGE equation that describes the way the entire piece of gear works.

This is very different from the way most plug-ins are made, which is to tweak the characteristics of a generic sort of "audio Lego block." Like there is a gain Lego block, and it can be programmed to behave in a FET-like manner, and we can slap another block after it that adds 2nd order harmonic distortion. I am simplifying things to paint a picture so you can have this somewhat clear in your head.



In a piece of analog equipment, electricity—the audio signal—flows through the circuit at just under the speed of light. Which means that if you change something at the beginning of the circuit, EVERYTHING in the circuit changes at the exact same moment. The signal doesn't go through a transformer, then a moment later through the FET, then through a resistor. It doesn't proceed from Lego block to Lego block sequentially. It is in all places at once.

Which strikes you as more like analog? A stack of Lego blocks or a huge equation being solved at the sample rate—if you're at 96k then the equation is solved 96,000 times a second. Which sounds more like everywhere at once at just under the speed of light? Better yet, which sounds better? Which sounds more analog? Which responds like an actual piece of hardware?

Of course, component level modelling requires processing power, and perfecting the code so that it runs fast and very efficiently. Dan figured that out. Our KA1776 is a beast. And you have one! Onward!



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SPECIFICATIONS

Minimum System Requirements

Quad Core i5 Processor

4GB of RAM

Mac OS X 10.14 or Later

Windows 7 & Above

Linux minimum: Ubuntu 18.04 LTS or equivalent (x86-64)

Linux recommended: Ubuntu 20.04 LTS or later, Debian 11+, Fedora 36+, or any modern distribution using glibc $\geq$ 2.28

Supported Plug-in Formats

Intel Mac 64bit: VST3, AU, AAX

Windows 64bit: VST3, AAX



COMPRESSION



The KA 1776 is **two complete compressors in one plug-in** — a top unit and a bottom unit. Each unit has a full set of controls, that can either be ganged together or work totally independently of each other, each an independent channel with its own full set of controls. In normal stereo use the top unit handles the LEFT channel and the bottom unit handles the RIGHT. (In Mid-Side mode the top unit becomes MID and the bottom becomes SIDE — more on that in **Additional Controls**.) The two units can be linked so their knobs move together, or unlinked for fully independent processing.

COMPRESSOR CONTROLS

These are the same for each unit.

INPUT



INPUT sets the amount of compression. Turn it clockwise and you get more compression, counterclockwise for less. It isn't a threshold control. The threshold on the '76 is fixed, and when you turn up INPUT, you push the signal up into an over the threshold. You can think of it as a threshold in reverse, if that is easier for you. Actually, thinking of things in reverse isn't a bad idea when it comes to this thing...

INPUT ranges from -100 dB up to +30 dB. This unit can handle very hot signals.

QUICK TIP: Set the **METER** to **GR** (gain reduction). Turn up INPUT until the meter deflects to the left, down from 0VU. The movement of the meter is really important to setting the unit and we'll talk more on that.

OUTPUT



OUTPUT sets the output level of the KA1776. Think of it like a make-up gain control. Remember, turning up INPUT not only increases compression, it increases overall level, so often you'll be counter adjusting the OUTPUT based on where INPUT is.

QUICK TIP: Switch the METER to +4, and it will show you OUTPUT level. YOU'll use this to trim out the INPUT and OUTPUT settings to get that meter to ride around 0VU. This is another way to set up the compressor: look at the METER in +4 and restrict its movement.

ATTACK



ATTACK sets how quickly the compressor kicks in once the signal crosses threshold. And it can be incredibly fast—set it to 7 and it attacks in 20 microseconds. How fast is that? It's the distance across 1/10 of the radius of a human hair. The attack of the '76 is fast enough to catch any waveform below 50kHz—it's basically instantaneous at fully clockwise.

Remember the bit about things being in reverse? The ATTACK control is reversed—it gets faster as you turn it clockwise and slower as you turn it counterclockwise. Think of it like a car accelerator or a speed knob on a machine or a video game.

TECH NOTE: At very fast attack settings the compressor “rides” the individual peaks and valleys of the waveform rather than tracking the sound’s envelope. The result is that the gain reduction isn’t smooth but it sounds kinda cool. In fact, it creates harmonic distortion, and that distortion is a big reason the unit sounds the way it sounds.

ATTACK OFF

Turning **ATTACK** fully clockwise to 1 **bypasses the compression** for that unit entirely, passing the signal through uncompressed, essentially turning it into a saturator. Crank up INPUT, turn down OUTPUT! More on this later...

RELEASE



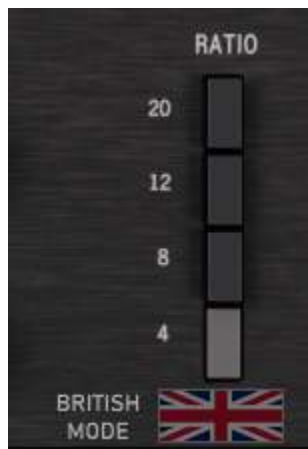
RELEASE sets how quickly the compressor stops working after the signal drops below threshold. Again, this control is reversed—fastest release is fully clockwise at 7 (10ms), slowest is fully counterclockwise at 1 (1100ms).

I have no idea why they used a 1 and a 7 and reversed the controls. Maybe someone made a mistake.

Very fast release times cause Pumping, which is when the compressor “rides” low frequency waveforms rather than riding the signal’s envelope. Pumping is a very common occurrence. To get rid of it, turn the RELEASE towards 1. Slower. Damn you, Putnam! It sounds so good but it makes me feel dyslexic!

QUICK TIP: Switch the METER to GR and use it to set the release. If you’re compressing something last, like a snare, you want the ATTACK to let the transient through for punch, so set it to like 1. You want the compressor to fully recover BEFORE the next snare hit, so it lets the transient through so it is punchy, right? SO... watch the meter as you adjust RELEASE. You want that needle back up to 0VU just as the next snare hit comes in. In general, the meter’s movement should look musical, like it is a visual model of the signal.

RATIO



RATIO sets how much compression happens to the signal when it is over threshold. 4 is 4:1 etc. You get the picture. The higher the number, the more compression you get. But also...

Each ratio has a different knee and reacts differently to the signal. This is a design feature and it gives you a lot of versatility in the studio. Each ratio setting sounds slightly different,

and the threshold will appear to change depending on the setting. 4 is gentle, as the number goes up the unit gets more aggressive.

QUICK TIP: RATIO to 4, METER to GR, set the INPUT to get some deflection (compression) then set RELEASE to get the needle moving musically, then switch to +4 to set the OUTPUT, then select different ratios and pick which sounds the best.

BRITISH MODE (All-Buttons-In)

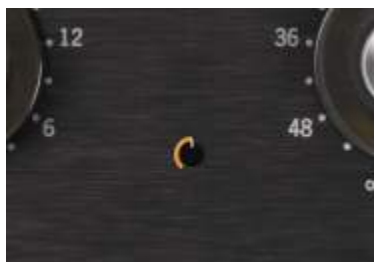
BRITISH MODE simulates pressing all four ratio buttons in at the same time. It makes the thing go berzerk.

Somewhere in a studio, someone decided to push all the ratio buttons in. Maybe they were trying to break it. Who knows. The All Buttons In sound is *the* classic trick on this thing. It yields wild levels of compression and saturation. Utter chaos.

Why is it called British Mode? Maybe a British engineer discovered it. Maybe an American engineer discovered it and he owned a British car, and thought that when he pressed all the buttons in, it sounded like his car falling apart. Haha! Happy Fourth of July!

QUICK TIP: Run a drum set through this thing set to BRITISH MODE. It's almost unusable. But... run it in parallel and it is magic. The sound of the 70s.

SATURATION



SATURATION gives you some additional control of the saturation of this unit.

Center position (50%) is the amount of saturation the hardware unit produces—its stock setting. Turning it counterclockwise cleans up the signal and lowers overall saturation. Use this for more delicate audio tracks that are more exposed in the mix or for mastering, perhaps. Crank it clockwise and it gets dirtier and dirtier.

TECH TIP: This control is an amalgamation of a number of settings that Dan used to manually tweak in the studio during sessions. For those interested, it adjusts Bias, transformer saturation and amp headroom.

The VU Meter



The **METER** is really useful. There are tips throughout this manual on how to read it and interpret its movement. The **METER SELECTOR** adjusts what the meter shows.

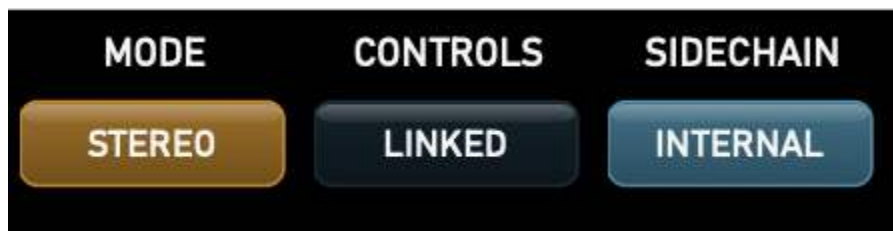
- **GR — Gain Reduction.** The needle swings to the *left* to show how many dB the compressor is pulling down. This is the setting you'll use most: drive INPUT until the needle is dancing where you want it.
- **+8 and +4 — Output level** calibration. These show the output level of the unit, calibrated so that the meter's "0 VU" reference lines up with the selected level (+8 or +4 dBu-style reference). +4 is professional studio level and where you'll usually set it to see output level. +8 was a setting used in broadcast studios. I guess if you're REALLY slamming signals through it, setting it to +8 might unpin the meter.
- **OFF** — Turns it off.

QUICK TIP: Flipping between GR and +4 is a thing you should do as you learn how the unit works and sounds.

ROUTING CONTROLS

The KA1776 is two independent limiters in one plug-in, which gives it tremendous flexibility. It can be configured for mono, stereo, dual mono, mid-side and serial operation. It's easier to understand if we simply explain the various ways you might set it up.

STEREO



This is standard stereo. Both the left and right channels are processed identically, same RATIO, ATTACK, RELEASE and INPUT and OUTPUT settings. Both units are detecting the same signal and “listening” to it.

TOP UNIT: Left

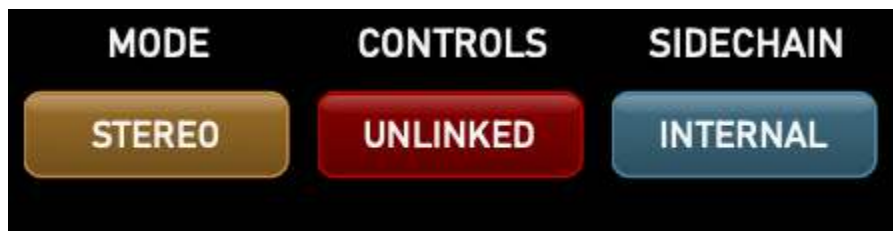
BOTTOM UNIT: Right

MODE: Stereo

CONTROLS: Linked

SIDECHAIN: Internal

DUAL MONO



Like STEREO, except the right and left can have different control settings. Both units are detecting only the signal passing through the unit—left “hears” left, right “hears” right. This is a useful mode when there isn’t a lot of correlation between the two sides of the signal, like on a Beatles record where the bass is on the right and the drums and everything else are to the left.

TOP UNIT: Left

BOTTOM UNIT: Right

MODE: Stereo

CONTROLS: Unlinked

SIDECHAIN: Internal

M/S STEREO



This is stereo, but instead of a Left and a Right, the signal is split into things that are panned to the middle (the M or MID) and things panned to the Left or Right (the S or SIDE). Note that some signals will sort of be in both the M and the S—like if you panned something 45% to the right. The controls are linked, so any adjustment to INPUT applies to both the M and the S channel, and the detectors are linked.

TOP UNIT: Mid

BOTTOM UNIT: Side

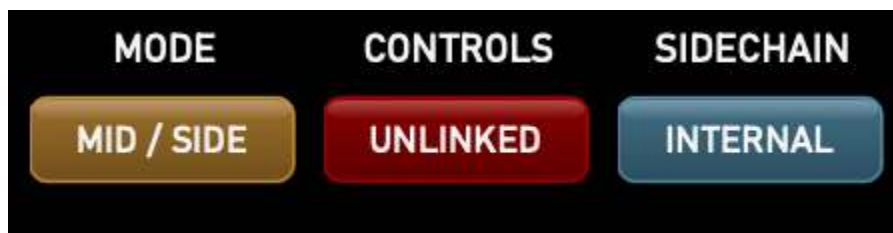
MODE: Mid/Side

CONTROLS: Linked

SIDECHAIN: Internal

If you think about it, this mode is identical sonically to Stereo. So, why do this? Because if you UNLINK the two units...

M/S



This is stereo, but the MID and SIDE controls are independent from each other, which means you can do different things to each. As an example, you can crush the hell out of the MID and gently compress the SIDE. You can turn the OUTPUT up on the SIDE and down on the MID and get a weird, phasey too wide stereo effect. Or use one unit as a compressor and the other as a saturator by turning off the ATTACK. Imagine the fun you can have with a squashed, fuzzy reverb?

M/S is especially handy on a bus. The detectors of each unit are unlinked, so the MID listens to MID information, etc.

TOP UNIT: Mid

BOTTOM UNIT: Side

MODE: Mid/Side

CONTROLS: Unlinked

SIDECHAIN: Internal

SERIAL



The TOP unit feeds into the BOTTOM unit. Think Human Centipede but with compressors. You can link the controls, which means adjusting one unit adjusts the other as well, which is dumb, because what you want to do is set these two differently.

As an example, set the TOP to 20, set INPUT so that it only kicks in to limit loud signals, then set BOTTOM with a slow ATTACK and a long RELEASE at 4, and bring up INPUT until the meter is moving nicely and the overall signal is gently compressed. This is a great way to do vocals and bass.

You can also set both units to saturation only by setting their ATTACKs to OFF. Or set one to compress and the other to saturate. Experiment! You can't hurt yourself.

The KA1776, even in Serial, still passes the signal through in stereo, you just don't have control of the right and the left independently.

TOP UNIT: FIRST

BOTTOM UNIT: SECOND

MODE: Serial

CONTROLS: Unlinked

SIDECHAIN: Internal

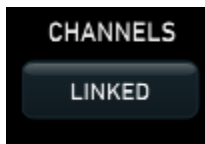
MODE: STEREO, MS and SERIAL



MODE switches how the two compressor units are routed. It has three positions:

- **STEREO:** The TOP unit processes the LEFT channel, the BOTTOM unit processes the RIGHT. This is your normal mode for stereo material.
- **MS — Mid-Side:** The stereo signal is split into a MID (center) component and a SIDE (width) component before compression. TOP is MID, BOTTOM is SIDE.
- **SERIAL** — TOP feeds into BOTTOM.

CONTROLS: Linking the two units



CONTROLS button links or unlinks the two units' controls and detectors. When set to **LINKED**, moving any knob or button on one unit moves the matching control on the other unit, so both channels stay identical — the easy way to work on a stereo source. When **UNLINKED**, the two units are adjusted completely independently, which is what you want for dual-mono, for Mid-Side, or any time the two sides of your signal need different treatment.

SIDECHAIN and DETECTION



We can roughly divide a compressor into two parts, a gain reduction circuit, which does the actual compressing of the audio signal, and a detector circuit, which tells the gain reduction circuit to compress or not.

The detector “listens” for a signal, we’ll call it the control signal, and if the control signal goes above threshold, the compressor triggers and the gain reduction part of the circuit compresses the audio signal.



So, there are two signals at work, one, the audio signal, which gets processed and that is what we hear at the output, and the control signal, which we don't hear at the output but it "controls" when and how the compressor reacts. This detector circuit and the control signal is often referred to as "the Sidechain," because it isn't the main audio signal, it's on the side.

The **SIDECHAIN** button (bottom right, next to DRY/WET) chooses what the compressor's detector listens to. It has three positions:

- **INTERNAL** — the normal setting. The detector listens to a control signal based on the audio signal passing through the plug-in. This is standard compression. Note that when the CONTROLS are linked, this control signal is a mix of the left and right or top and bottom channels. When unlinked, the left hears left, the right hears right, etc.
- **EXTERNAL** — the detector listens for an external signal and NOT the audio signal feeding through the unit. So, if we put the KA1776 on a bass, and then run a kick signal into the Key Input, the compressor will clamp down on the bass when the kick goes above threshold. This is called ducking. It is like automated gain riding. Stick a music bed through the KA1776 and then feed a voice over into the key and when the voice is speaking, the volume on the music drops. Cool beans.
- **BLEND** — a mix of both. The **KEY BLEND** knob then sets how much of the detection comes from the internal signal (**INT**) versus the external key (**EXT**). At 50% the detector hears an equal blend of both. This is a more musical, less all-or-nothing way to use an external key — you get the ducking action without the main signal completely losing its own dynamics. So, let's say ya got that bass perfectly compressed and it sounds great in the mix... but it could be a little tighter with the kick. Add the kick in the key, schwiggle the BLEND until the bass sounds like how you want it.

Setting up the external sidechain.

The KA 1776 exposes a stereo sidechain (key) input to your DAW. How you route a track to it depends on your host — look for a "sidechain" or "key input" selector on the plug-in's insert. Once a key is routed, switch SIDECHAIN to EXTERNAL or BLEND to hear it work. You can preview how the key is hitting the threshold in the **Analyzer** before you commit (see the Analyzer section).

The **KEY BLEND** knob only appears/does its thing when SIDECHAIN is set to BLEND.

Detection linking between the two units (stereo-linked vs. dual-mono detection) is handled by the **SIDECHAIN** pill in the Analyzer's signal-flow chart — see the Analyzer section.

ADDITIONAL AUDIO CONTROLS

HIGH-PASS and LOW-PASS FILTERS

Down each side of the plug-in, above the meters, you'll find HPF (high-pass) and LPF (low-pass) filter controls — one set on the INPUT (left side) and one on the OUTPUT (right side). Each filter has an on/off, a cutoff frequency, and a selectable slope of 6, 12 or 24 dB per octave.



Input filters sit before the compressor. A high-pass on the input is especially useful: rolling off the deep bass before the detector sees it stops the compressor from pumping on kick drums and low-end energy, so the compression tracks the body of the sound instead of the sub. This is the classic "sidechain HPF" trick, and here it filters the audio too.

Output filters sit after the compressor, for cleaning up the low end or taming the top after all the harmonics have been added.

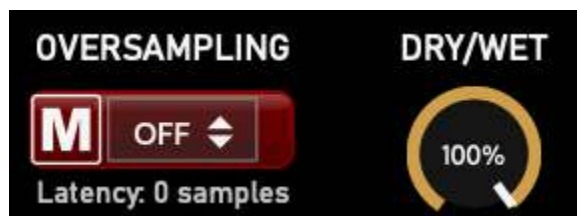
The HPF cutoff ranges from 20 Hz to 1 kHz; the LPF cutoff ranges from 1 kHz to 20 kHz. The little readouts on the side of the plug-in show each filter's current frequency and slope.

INPUT and OUTPUT Meters and Trims



The vertical INPUT (left) and OUTPUT (right) meters along the outer edges show the levels feeding into and out of the plug-in, in dB Full Scale (the top of the meter is 0 dBFS). Each meter has a fader beneath it that acts as an INPUT TRIM and OUTPUT TRIM, letting you set healthy levels going into and coming out of the processing without touching the INPUT/OUTPUT gain knobs that set the compression. There's a digital peak readout as well.

Click the small arrow tab on a meter to expand it for a bigger, easier-to-read display; click again to collapse it back to the edge.



OVERSAMPLING

The OVERSAMPLING control (bottom, next to CHANNELS) runs the compressor's internal processing at a higher sample rate — 2x, 4x, 8x or 16x — and then filters the result back down. Because this compressor's attack is measured in microseconds, it can react faster than a normal sample rate can cleanly represent, which produces aliasing. Oversampling gives that ultra-fast FET behavior room to breathe and keeps the harmonics clean.

Higher oversampling sounds better but costs more CPU and adds a little latency (shown as Latency: 0 samples at the current setting; the number rises as you increase oversampling and depends on the filter type). There are two filter types available for the oversampling — a Linear-Phase type and a Minimum-Phase type — trading off phase behavior against latency. Use more oversampling on important sources and at mixdown; back it off if you're stacking dozens of instances.

DRY/WET

The DRY/WET knob (bottom right) blends the processed signal against the original dry signal for parallel compression. This is one of the great tricks with this style of compressor: slam the signal hard — punch in the ratio buttons, fast attack, lots of gain reduction — then blend it back underneath the dry signal with DRY/WET. You keep the natural transients and dynamics of the dry signal and add the density, punch and grit of the crushed signal beneath it. At 100% you hear only the compressor; pull it back and the dry signal comes up.

Resizing the plug-in

Grab the triangle in the lower-right corner, drag to the size you want, and release. Expanding the input/output meters also widens the window to keep everything readable.

THE ANALYZER

The KA1776 has a comprehensive analyzer that lets you see how the unit is processing your signal. It's great for speeding up your adjusting of a signal, and even better as a means of training your ears.

The analyzer has three distinct sections. The LEFT shows you what is happening on the input side of things, the CENTER shows how the units of the KA1776 are routed, and the RIGHT shows information regarding compression.

Click the ANALYZER button to see or hide the Analyzer screen.

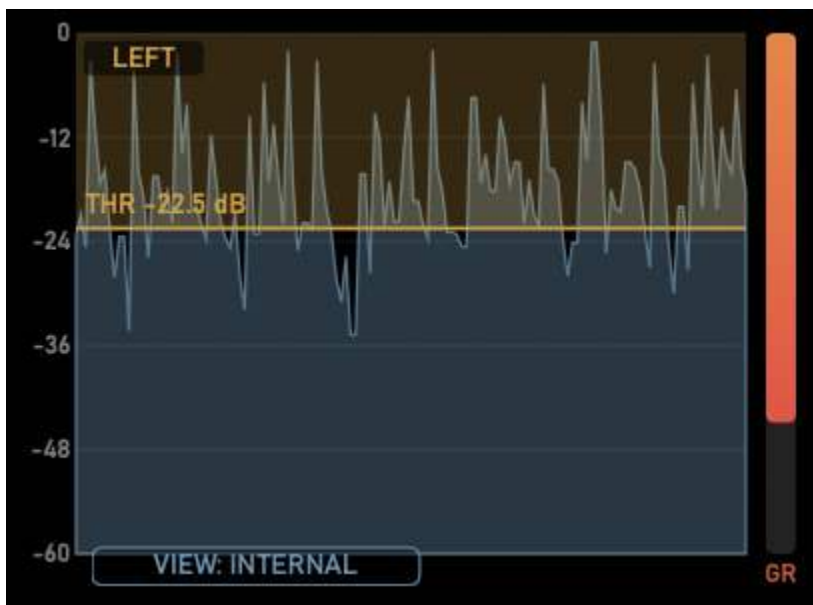
Choosing which unit to view



The VIEW button chooses which unit is displayed in the Analyzer. Because the KA 1776 has two independent units, the **VIEW** chooses which unit the analyzer is displaying. In STEREO you can pick either LEFT or RIGHT, in MID/SIDE your choices are MID or SIDE.

The analyzer has three sections, left to right.

Left: Input level vs. Threshold



The left display shows the **input level** feeding of the selected unit against a scale in dB, with the compressor's **threshold (THR)** marked as a horizontal line. The shaded area above is signal that is over the threshold.

You'll note that if you switch between the different **RATIO** settings, the threshold changes..

When the signal rises above the threshold line, the compressor is working; the amount above the line is roughly the amount you're driving into the compression. There's a **GR** meter on the right edge that shows gain reduction, and if you turn up the **INPUT** knob you'll get more gain reduction.

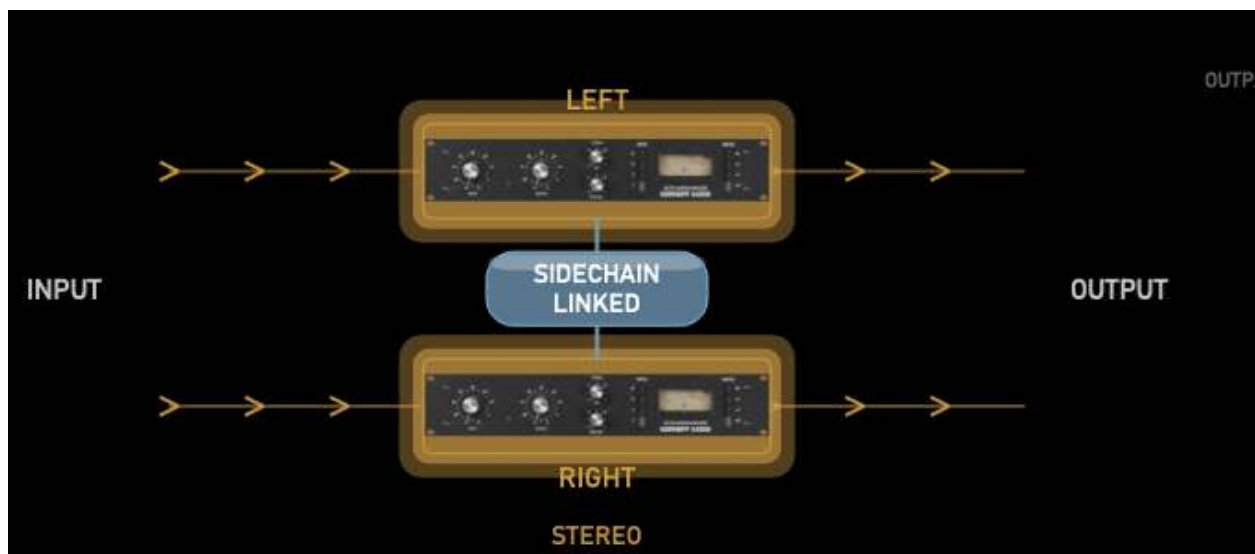
At the bottom is a **VIEW** button that shows the signal the detector is listening for.

INTERNAL is the signal the compressor is processing.

EXTERNAL is the key input signal. It is is a kcik drum, it will look like a kick drum waveform, etc.

BLEND shows the mix of **INTERNAL** control signal and **EXTERNAL** key signal.

Center: Signal-Flow Chart



The center of the analyzer is a live **signal-flow chart** showing how audio moves through the plug-in: **INPUT** on the left, through the **top unit** and **bottom unit**, to the **OUTPUT** on the right. The label at the bottom (**STEREO**, **MS** or **SERIAL**) reflects the current **MODE**, and

the diagram redraws to show that routing — so in SERIAL mode you can see the signal running through one unit and then the other.

In the middle sits the **SIDECHAIN** pill. This toggles whether the two units' **detection is linked**. When linked (stereo-linked detection), both units respond together so the stereo image doesn't wander under compression — the standard choice for stereo material. When unlinked, each unit detects independently (dual-mono detection). Click the pill to toggle it. This is a detection setting only — it's independent of the MODE and the CHANNEL control.

Right: The Compression Curve



The right display is the **transfer curve** — a graph of output level (vertical) against input level (horizontal) for the selected unit. This is the classic "compression curve": below the threshold it's a straight 1:1 line, and above the threshold it bends according to your RATIO setting. The steeper the bend, the harder the compression.

The WHITE DOT is an indicator of the INPUT knob setting and overall input gain. The shaded area moves up and down in response to the OUTPUT setting and reflects the output gain of the unit.

The point at which the gold line bends is the knee, which is a way of describing how sharply the compressor reacts to a signal over threshold. A soft knee gradually ramps up compression as the signal goes over threshold. If the signal is a little over threshold, the ratio might be 2:1. As it increases more the ratio moves towards 4:1 or 8:1, depending on

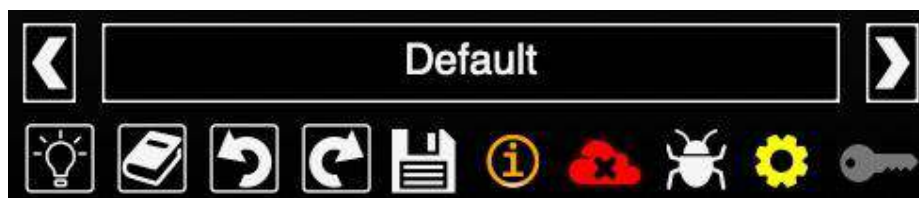


the ratio setting. A hard knee setting applies full compression immediately: a signal a little over threshold gets slammed down at 12:1 or 20:1 , depending on the setting.

At top right is a **KNEE** indicator; it shows either SOFT or HARD depending on the ratio. At top left you'll see the compressor's ratio setting.

Watching this curve while you audition ratios and British Mode is one of the fastest ways to understand how this particular compressor behaves — and why it sounds so different from a clean, clinical limiter.

UTILITY PANEL



The **UTILITY PANEL** allows you to save and recall presets, futz around with your license situation, and some other stuff. You're not reading this part of the manual anyway, are you?

The **LIGHTBULB** brings up the tool tips, and the **BOOK** opens the user manual, which you are currently reading. Well done! You've mastered the BOOK button and the day is still early! **UNDO**, to the left, undoes the previous setting. **REDO**, to the right, redoes the previous setting... pressing them a lot can be very confusing.

The **DISK** saves the current settings of the plug-in as a Preset.

INFO (letter I in a circle). Click this to see the version number of the plug-in, a list of who did what to make it happen, cooking and household cleaning tips, etc.

UPDATE NOTIFIER (colorful cloud symbol): This indicates whether or not there is an update to your plug-in software. Green means good, and there is more information about this under Activation.

The **BUG** (it looks like a bug) is a link to a place on the Korneff Audio empire where you can report problems with this software. If you don't see the BUG, then it means everything is utterly perfect with our software.

The **GEAR** brings up the Global Settings Panel. There's a section about this coming up next...

Click on the **KEY** symbol to see your license activation options. There's a whole bunch about licensing looming in your immediate future.

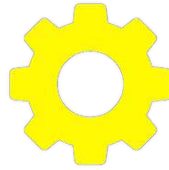
Preset Browser

Click on the Preset Name to access the preset browser and load and save presets. The **ARROWS** allow you to step through the presets and audition them. The **DISK** button saves the current setting to the preset library.

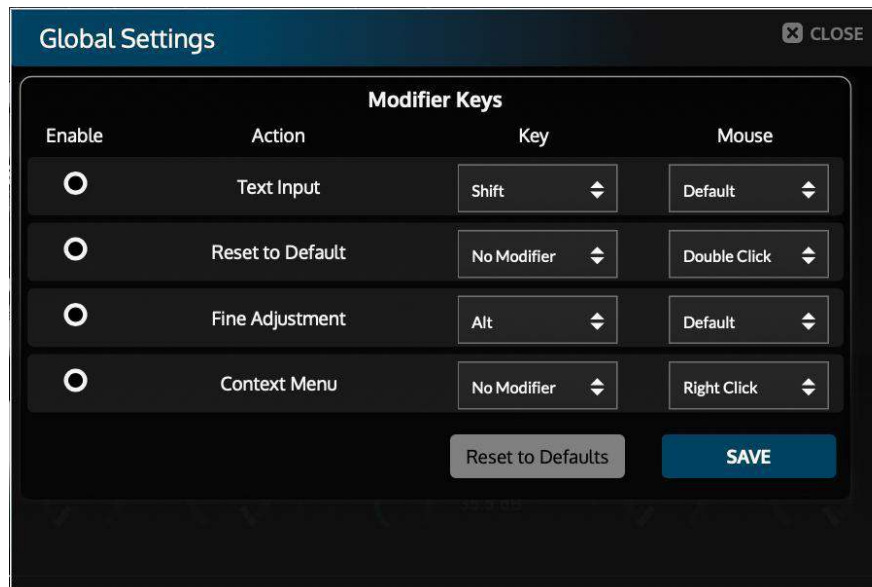


The **PRESET BROWSER** has three columns. The column to the far left shows the name of the Bank, the middle column shows the Category, and the third column shows the Preset.

GLOBAL SETTINGS



The Global Settings Panel allows you to personalize how you interact with the plug-in's controls by customizing key and mouse modifiers for specific actions. This flexibility enhances your workflow and ensures that the plug-in behaves according to your preferences.



Accessing the Global Settings Panel

To open the Global Settings Panel:

1. Locate the Settings Icon in the application's interface. It typically appears as a gear or wrench icon.
2. Click on the Settings Icon.
3. The Global Settings Panel will appear, overlaying the main application window.



Modifier Keys Section

The Modifier Keys section is the main area where you can adjust settings related to key and mouse modifiers for various actions.

The Modifier Keys section is divided into several columns:

- Enable: Toggle whether an action is active or disabled.
- Action: The specific function you can customize (e.g., Text Input, Reset to Default).
- Key: Select the keyboard modifier key for the action.
- Mouse: Select the mouse action modifier for the action.

Customizing Modifier Keys and Mouse Actions

You can tailor the behavior of the application by adjusting the key and mouse modifiers for each action.

Enable/Disable Actions

- Enable Checkbox: Located in the Enable column next to each action.
- Enabled (Checked): The action is active and will respond to your specified modifiers.
- Disabled (Unchecked): The action is inactive and will not respond, regardless of modifiers.

Selecting Key Modifiers

1. In the Key column, click on the dropdown menu corresponding to the action you wish to customize.
2. Choose from the following key modifiers:
 - Shift
 - Alt
 - Ctrl
 - Cmd



- No Modifier

Selecting Mouse Modifiers

1. In the Mouse column, click on the dropdown menu for the desired action.
2. Select from the following mouse modifiers:
 - Right Click
 - Double Click
 - Default (Single Click or Drag, depending on the action)

Actions You Can Customize

- Text Input: Allows direct text entry for controls.
- Reset to Default: Resets a control to its default value.
- Fine Adjustment: Enables precise adjustments of control values.
- Context Menu: Opens a context-specific menu with additional options.

Resetting to Default Settings

If you wish to revert all your customizations back to the application's default settings:

1. Click the Reset to Defaults button located at the bottom of the Modifier Keys section.
2. A confirmation message will appear: "Key modifiers reset to default. Click 'Save' to apply changes."
3. Note: You must click Save to apply the default settings.

Saving Your Settings

After making changes:

1. Click the Save button at the bottom of the Modifier Keys section.
4. A message will confirm: "Settings saved successfully! Changes applied on next launch."
5. Important: The new settings will take effect the next time you launch the application.



Important Notes

Applying Changes: Remember that changes to modifier keys and mouse actions will be applied the next time you launch the application.

Duplicate Modifiers: The application will alert you if you assign the same key and mouse modifier combination to multiple actions. Ensure each action has a unique combination to avoid conflicts.

Modifier Combinations: Some combinations may not be valid depending on your operating system or keyboard layout.

Troubleshooting

- **Settings Not Applying:**
 - Ensure you have clicked the Save button after making changes.
 - Restart the application to apply the new settings.
- **Failed to Load Settings:**
 - An error message may indicate issues with the settings file.
 - Try resetting to default settings and saving again.
- **Duplicate Combination Warning:**
 - If you receive a warning about duplicate combinations, adjust the key or mouse modifiers to create unique combinations for each action.

By customizing your modifier keys and mouse actions, you can optimize your interaction with the application to suit your workflow. If you have any further questions or need assistance, please refer to the application's support resources.

LICENSING ACTIVATION

Activation is a crucial step in getting your plug-in up and running. In this section, we'll guide you through the activation process, explaining the available options and how to use them.

Activation Options



Upon launching the plug-in, you'll be presented with a set of activation options. Here's a breakdown of the available choices:

Online activation: Allows you to connect to your Korneff Audio account and activate the product seamlessly. This method ensures that your plug-in is always up to date and connected to your account, providing you with the latest features and improvements.

Offline activation: While currently disabled, it will soon allow you to transfer and activate your license on a device that isn't connected to the internet. This feature is ideal for situations where internet access is limited or unavailable.

Please note that offline activation is marked as "Coming Soon" and will be available in future updates of the plug-in.



Buy Now: Clicking this button will take you to the Korneff Audio website, where you can purchase a license for the software. Once the purchase is complete, you will receive your license key via email.

Support: Clicking this button will take you to the Korneff Audio Support page, where you can submit a support request. Fill in the required details and our support team will get back to you as soon as possible.

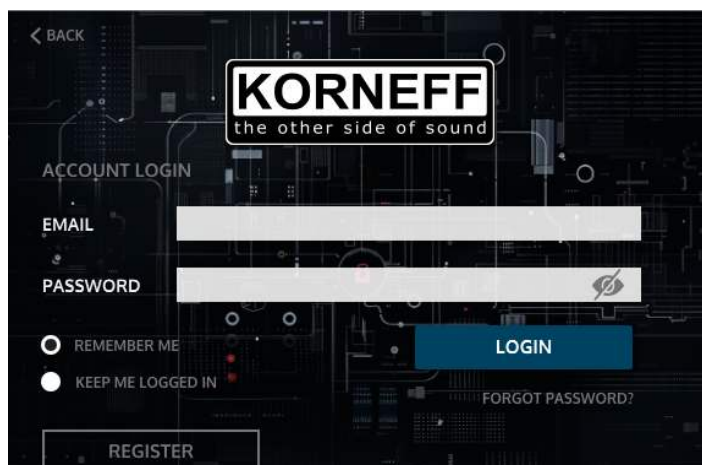
FAQ: Clicking this button will direct you to our FAQ page.

Online Activation



Online activation allows you to easily activate your product by connecting to your Korneff Audio account. Follow these steps to complete the online activation process:

Select Activate: Start by selecting the ACTIVATE option from the activation options panel.

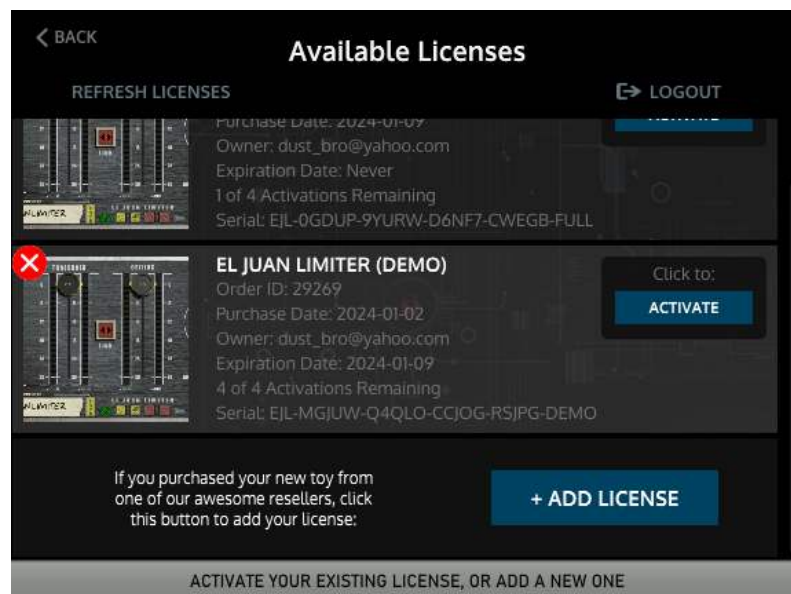




Log In to Your Account: You will be prompted to sign in to your Korneff Audio account if you haven't already. Enter your email and password associated with your account.

Keep Me Logged In: This will bypass the sign-in screen and automatically log you in with your saved credentials.

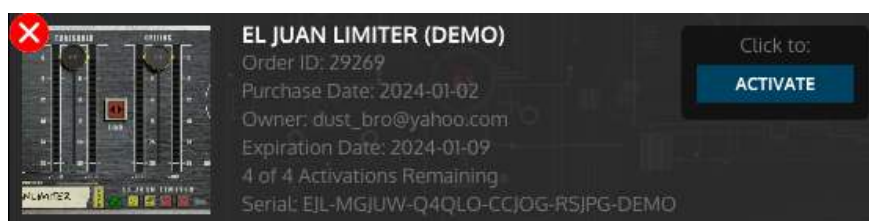
Activate Your License: Once you're logged in, you'll see a list of your licenses associated with your account.



Locate the
want to
list, then click

ACTIVATE button next to the license you wish to activate. This will initiate the activation process for that specific license.

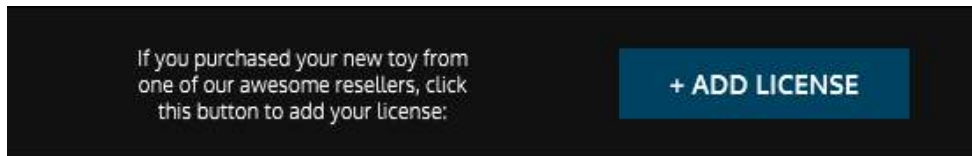
license you
activate in the
on the blue





Add License: If you purchased your product from a third-party reseller, you may need to click on ADD LICENSE to import the license to your Korneff Audio account.

Add License



Once you log in to your account, you can access the Add License panel by selecting the **ADD LICENSE** option from the License panel. This panel is specifically designed for users who have purchased their Korneff Audio product from an authorized reseller.

In the Add License panel, you will find a text input field where you will enter your license key. This key is provided to you by the third-party reseller from whom you purchased the product. Copy and Paste the entire code, including dashes.

Once you've entered your license key, click on the SUBMIT button. This action will send your license key for validation.

The system will validate the license key to ensure it's authentic and associated with a legitimate Korneff Audio product. If the validation is successful, you will receive a confirmation message indicating that your license has been added to your account.

After successfully adding your license, you will be automatically redirected back to the main license panel. Here, you will see your newly added license in the list, ready for activation.

Offline Activation

This option is currently under development and will be added soon.

UPDATE NOTIFICATIONS



The Update Notifier is a tool designed to keep you informed about the status of your software updates. This section outlines the different statuses and panels associated with the update notifier.

Auto-Update Off (Expired): This status indicates that either you've manually turned off the auto-update feature or haven't checked for updates in the last 30 days. When you see this status, it's a gentle reminder to consider enabling auto-updates. Keeping your software up to date ensures you have access to the latest features and improvements.

Update Available: When there's a new update waiting for your software, this status lights up. Clicking on this icon will reveal a panel packed with information about the available update, including its version number, release date, update type, and a detailed description. Plus, you'll find a handy button that takes you straight to the downloads section of your account, making the update process a breeze.

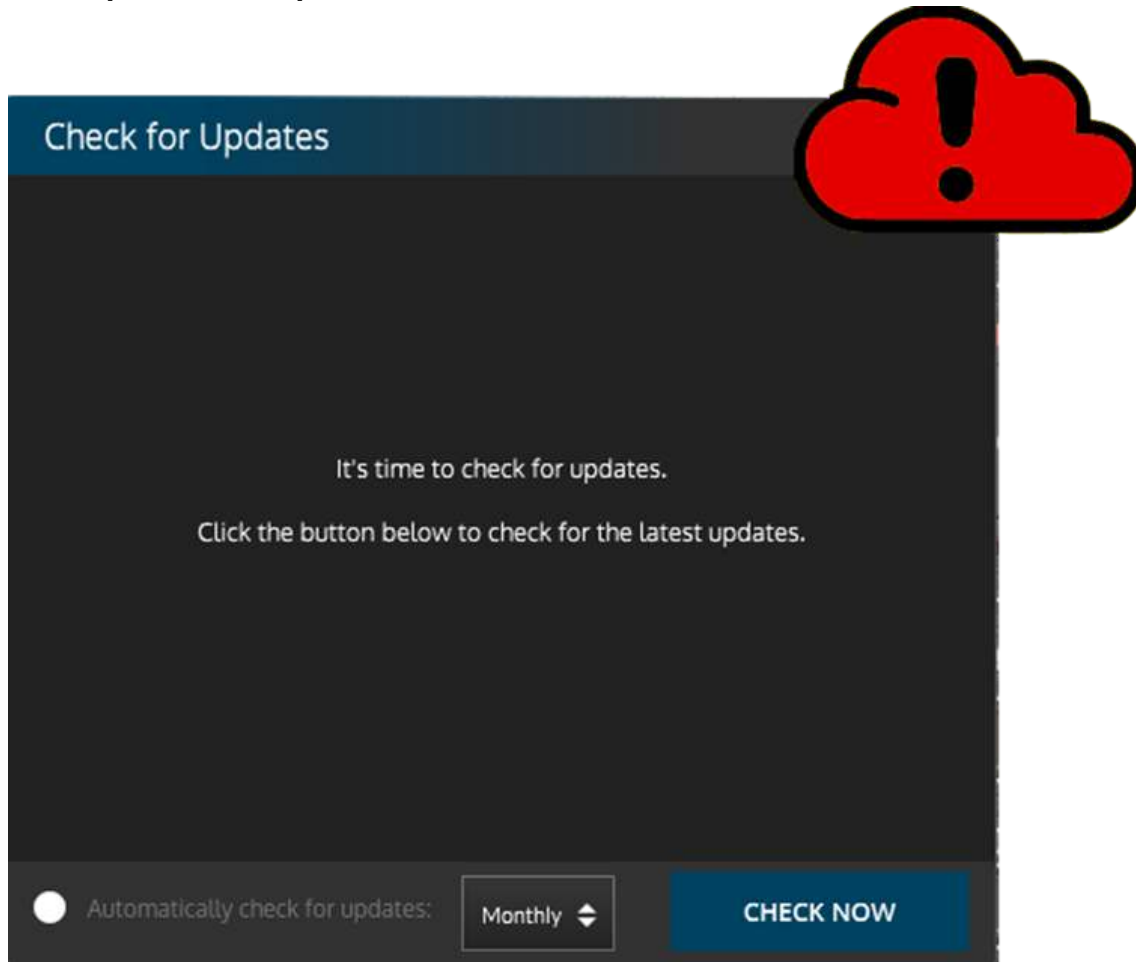
Up to Date: When everything's ship shape and your software is already running the latest version, this status puts your mind at ease. It's a reassuring pat on the back, confirming that you're already on the cutting edge of what your software has to offer.

No Internet Connection: If you find yourself in a digital desert with no internet connection available, this will appear. This status is a friendly way of saying, "Hey, we can't check for updates right now because the internet is out of reach." It's a temporary reminder that you may want to reconnect to the web when it's convenient to ensure you don't miss out on any future updates.

Clicking on the Update Notifier icon

No matter which status the icon displays, clicking on it will trigger a corresponding update panel. These panels provide you with actionable information and options, allowing you to make informed decisions about your software updates. Let's dive into the details of each panel. What fun:

Auto-Update Off (Expired)



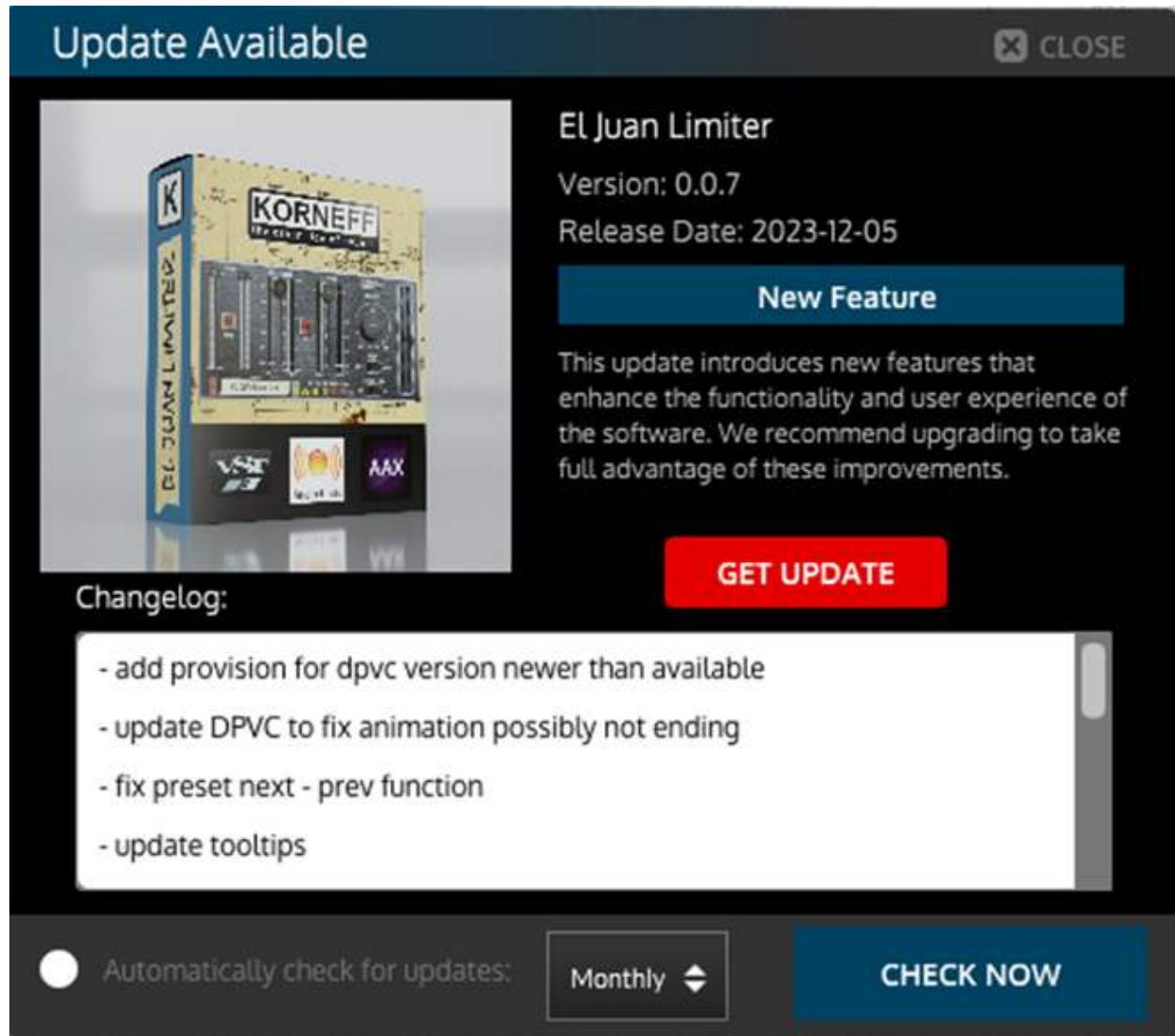
When you encounter the **Auto-Update Off (Expired)** panel, it's essentially your software's gentle nudge to consider enabling auto-updates. This status appears for two main reasons:

Auto-Update Turned Off: You might have manually turned off the auto-update feature, which means your software won't automatically fetch update information.

30 Days Since Last Update Check: If Auto-Update is off and it's been a month since you last checked for updates, this panel will remind you to stay current. Staying up to date ensures your software remains robust, secure, and packed with the latest enhancements.

Consider enabling auto-updates to streamline the update process and keep your software at its best.

Update Available



The Update Available panel signals exciting news – there's a new update ready and waiting for your software. This panel provides comprehensive information about the available update, making it easy for you to decide whether to proceed with the update. Here's what you'll find:

Project Name: The name of your software project, ensuring you know exactly which application is receiving the update.

Version Number: The specific version number of the update, indicating how significant the changes are.

Release Date: When the update was released, so you can gauge its freshness.

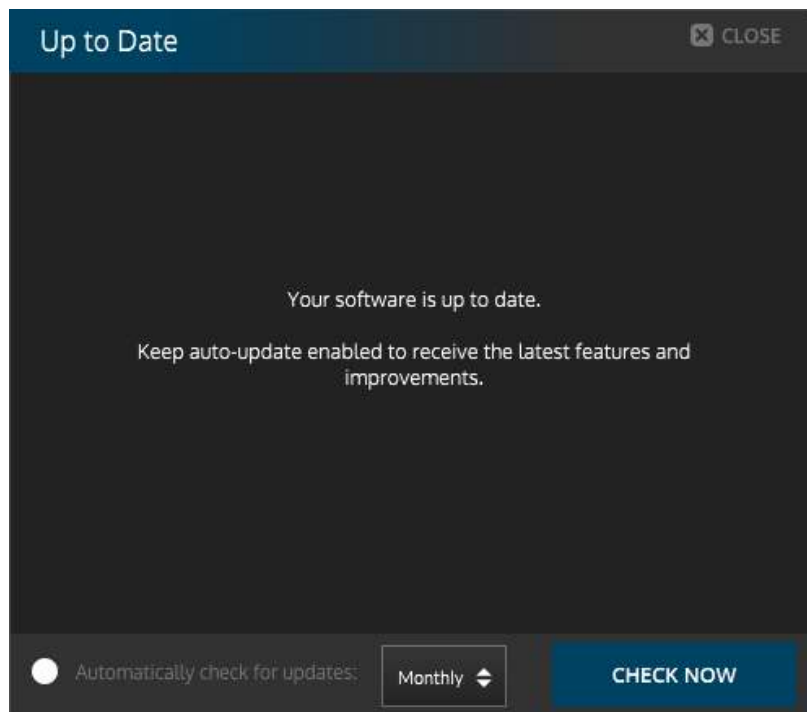
Update Type: This section highlights the type of update. Is it a minor bug fix, a major feature enhancement, or something in between? This detail helps you understand the nature of the update.

Update Description: A detailed description of what the update entails. This can include new features, bug fixes, and other improvements. It's your roadmap to what's changing.

GET UPDATE Button: A convenient button that, when clicked, takes you directly to the downloads section of your account. This means you can initiate the update process right away.

The Update Available panel equips you with all the information you need to make an informed decision about updating your software. Whether it's new features, bug fixes, or security enhancements, you'll know exactly what you're getting.

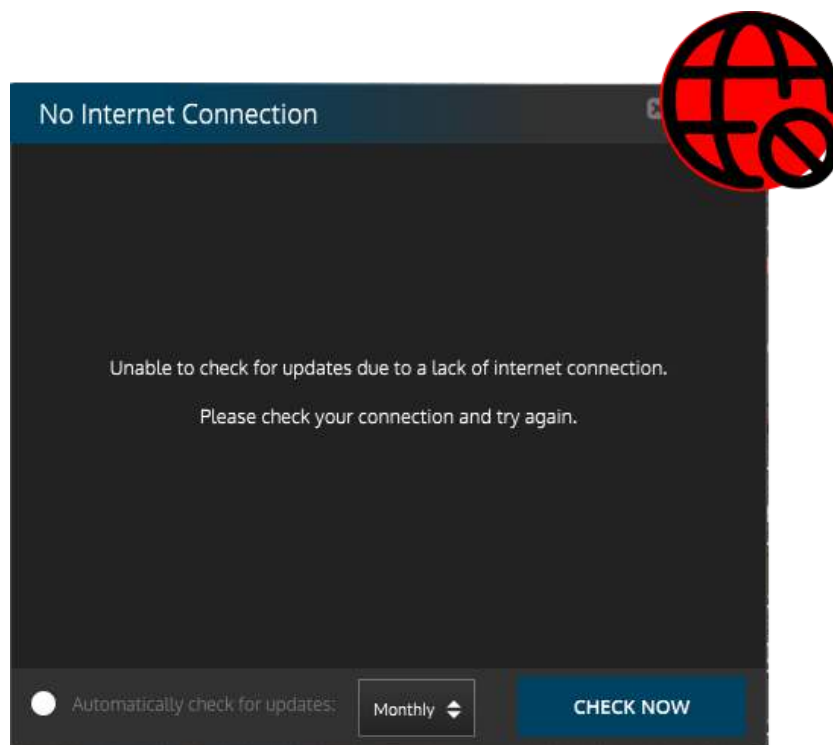
Up to Date



The Up to Date panel is your digital seal of approval, confirming that your software is already running the latest version available. When you see this status, it means you're in sync with the latest developments, features, and improvements. There's no immediate action required because you're already enjoying the best your software has to offer.

It's always a good feeling to know that your software is up to date and optimized for peak performance, and it's the least we can do to comfort you, given the mess that is this modern world and the inevitable rise of SkyNet and the extermination of the human race.

No Internet Connection



The No Internet Connection panel steps in when there's a temporary hiccup in your internet connection. This status politely informs you that, at the moment, it's unable to check for updates due to the lack of an internet connection.

While this status may appear momentarily, it serves as a reminder to ensure your device is connected to the internet. Once you're back online, the Update Notifier will resume its role, keeping you informed about your software's status.



USAGE IDEAS

I've been sprinkling usage tips throughout the manual, and there are presets in the plug-in, and this unit and its brethren are as common as white bread toast at a diner on Saturday morning, and I don't know what to add.... so maybe lets do Geeky History instead.

A compressed history of compressors

Compressors didn't come into being because someone in the mid-1930s needed a character box to get a vibe on a vocal. It was more about not getting in trouble with the FCC.

You see, son, radio stations are licensed to broadcast at a certain level of power, like... let's say 10,000 watts. The Federal Communications Commission gives the station a license and says, "You can output up to 10,000 watts. Don't go over that."

The VU meter on the radio station console is calibrated so that when it reads 0VU, the antenna out back belts out 10,000 watts of radio power. If the VU meter reads +3VU, do you know how many watts the radio station is now transmitting?

20,000 watts—power doubles every three dB. You just broke your license agreement with the FCC. You're overmodulating. So some guy invented a limiter to keep that from happening. It used tubes, and was big and heavy and hot and expensive, but it worked.

SO... what happens when the VU meter reads -3VU? That's right! Radio station transmission power drops to 5,000 watts. Less wattage means the signal doesn't travel as far, which means that the signal from the station might be a bit intermittent, especially if you're driving.

Radio station management doesn't want this, not because it sounds bad, but because a smaller transmission range means less advertising dollars feeding into the station to pay for everything. So, some guy developed another big heavy hot thing weith tubes to compress the signal—to push down the loud stuff and then bring up the entire signal to make the whole thing louder and longer ranged.

There were also some limiters and compressors used in film, to control level. And they were all tube based, expensive, hot and heavy.

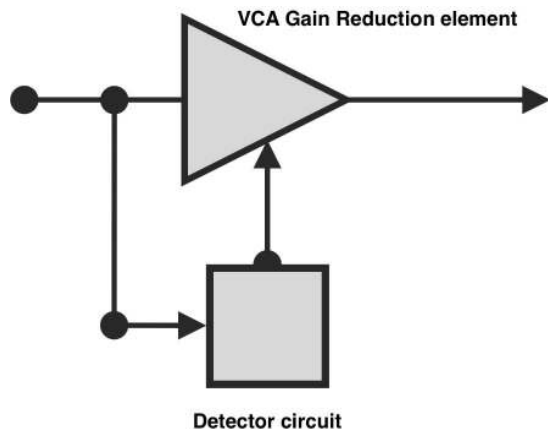
Recording studios would occasionally have limiters, if they had the budget for it, and perhaps the AC or ventilation? Picture a tube console, a bunch of tube EQs, tube power amps, and a tube limiter, all surrounded by a bunch of sweaty guys smoking. Lovely.

Bill Putnam was a recording engineer in California and, luckily for the pro recording world, a genius. He invented not only recording techniques, but equipment. And perhaps architecture—he built the first reverb chamber, the first vocal booth, designed the modern console as we basically know it, and he built a limiter called the 176.

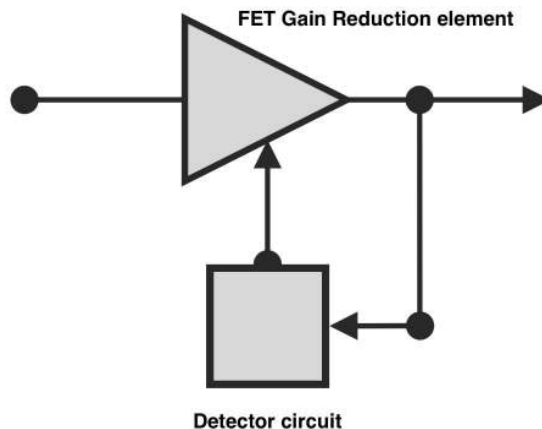
The 176 was tube, not so heavy, but pretty expensive, and hot. Bill was a genius. He redid the design using an FET transistor and invented the 1176. It was an immediate smash hit. And it's still smashing and hitting.

An FET is an interesting transistor. Bill developed a circuit that made the FET vary its gain according to an audio signal feeding into it. He tapped a little bit of signal from the main audio signal—we call this a control voltage or a sidechain signal, and used that to modulate the gain of the FET. This is compressor basics 101, really.

Putnam, though, chose to pull the control signal from the output after the FET rather than the input before the FET. The output was fed back into the input, so this is called a feed back design. VCA compressors use a feed forward design—the signal for the control voltage is derived before the VCA.



Feed Forward Circuit

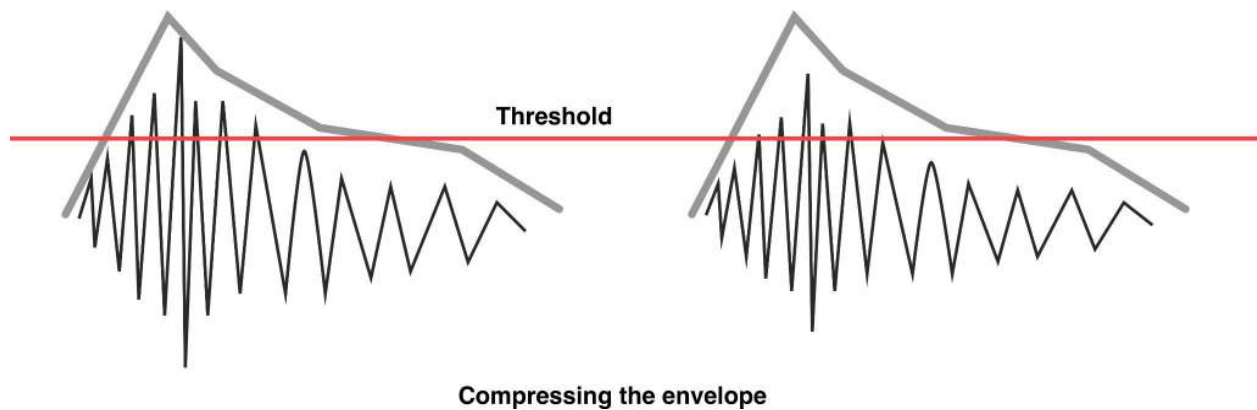


Feed Forward Circuit

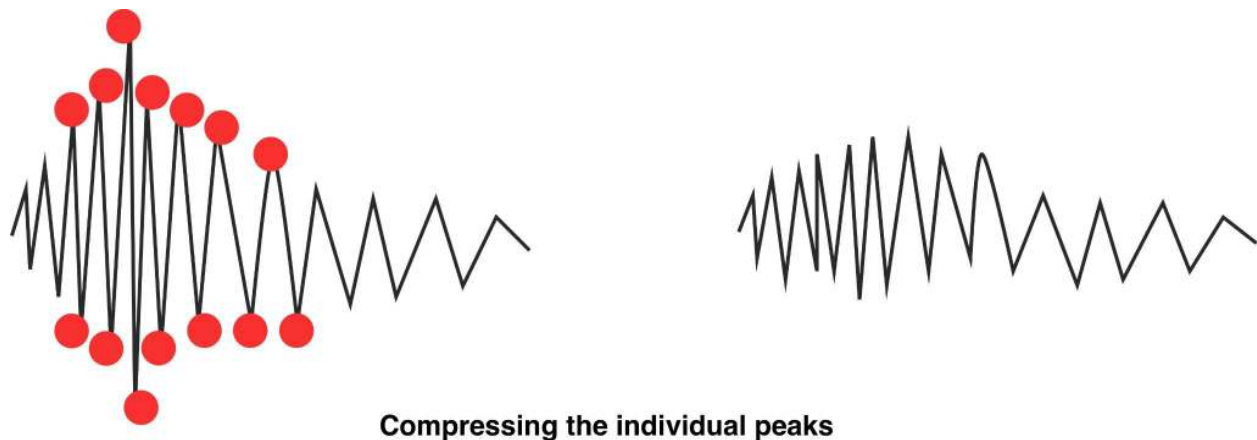
You might be thinking, “Wait. This thing is reacting to itself AFTER it compresses the signal? Isn’t that dumb or slow?

Well, first of all, signals travel through a circuit at not quite the speed of light and FETs are ungodly fast in responding to voltage changes. Putnam’s design was/is fast enough to stop any transient signal up to about 50,000 Hz. Essentially, it has an instantaneous attack.

But that speed does cause a problem. A sound is a collection of waves at different frequencies, with a distinct sort of shape, called an envelope. A guitar sounds like a guitar partially because of its harmonics and because of its envelope. A compressor is sort of supposed to work on the envelope, compressing the whole sound kind of together.



But the FET is SO fast, that it can compress individual waves within the envelope.





An analogy might be helpful...

There's a birthday cake with candles on it. Someone says, "Happy Birthday, Mr VCA Compressor, please blow out the candles," and Mr VCA Compressor takes a deep breath and blows out all the candles at once.

At Mr FET's party, when someone says, "Please blow out the candles," Mr FET blows out each individual candle one at a time at warp speed. Yes, the candles get blown out, but he spits all over the cake.

Ah, that spit. That's distortion. Because when you slam through the signal, lowering the peaks of individual cycles of the waves, you get a lot of clipping and therefore, harmonic distortion. That particular distortion is one of the reasons why FET limiters sound the way they do, especially with very fast settings. And there is also the even order harmonic distortion of the FET that make it sound musical and somewhat tube-like.

That tube-like, pleasant distortion is a trait that studio engineers have been capitalizing upon since forever. Overdriving a '76 turns it into a fuzzbox. You can hear this on Black Dog, by Led Zeppelin. Engineer Andy Johns — Glynn Johns younger brother—fed Jimmy Page's guitar into an 1176 and the output of that into another 1176, and slammed the output of the first one into the second one.

The All Button Down trick—British Mode—turns a '76 into a raving lunatic. The first time I saw this was in NYC as a kid. The engineer pressed everything down, fed a drum mix through it, and then brought it up slowly under the main stereo drum mix. In mono. It made the center of the drums jump out, and it wasn't that wide a drum mix, so it didn't wreck things and was really effective.

The unit, though, isn't just a smash and grab. You can set it very cleanly and with some tweaking, it can be all but unnoticeable while providing tremendous control of a signal's dynamics. Try doing this in SERIAL mode, with each unit doing a part of the work needed to control the track. If you need a total of 10dB of gain reduction to get the part to set right, set each compressor to do part of the work. You also might set one a bit slower than the other—you'll have to play with this a bit.



Play with it. That is the very best thing you can do with any of our plug-ins. Experiment. Play. If you're not sure what it might sound like, drop your monitor volume so you don't hurt your ears or your speakers if it's loud.

Have fun with the KA1776.