Desert Moon Audio

BLACK MAGIC

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Tube Limiting Amplifier · Holds It, Warms It, Leaves It Alive



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Black Magic is a tube limiting amplifier: the kind of unit a radio station put between the desk and the transmitter, built again as a plug-in. Set THRESHOLD where you want the program held, pick how fast it lets go, and bring the level back with OUTPUT. On the way through, the signal passes real valve stages and an output transformer, so it comes out held, thicker and a little warmer — and still moving.

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A NOTE ON THE DESIGN

Black Magic is an original Desert Moon Audio design. A limiter of this kind does not clamp: a pair of valves turns the level down as the program gets louder, gently just over the threshold and firmly further in, and a storage capacitor decides how quickly it comes back. Everything the signal meets on the way — an input triode, the push-pull gain pair, the output pair and the transformer — adds its own color at every level, so there is no setting where the sound of the unit suddenly begins. The face is a six-unit rack plate in black wrinkle enamel that has spent forty years in a rack.

1.1 What Gets Installed

FORMAT	LOCATION
Audio Unit	`/Library/Audio/Plug-Ins/Components/Black Magic.component`
VST3	`/Library/Audio/Plug-Ins/VST3/Black Magic.vst3`
AAX	`/Library/Application Support/Avid/Audio/Plug-Ins/Black Magic.aaxplugin`
VST3 (Windows)	`C:\Program Files\Common Files\VST3\Black Magic.vst3`
AAX (Windows)	`C:\Program Files\Common Files\Avid\Audio\Plug-Ins\Black Magic.aaxplugin`

After installing, restart your DAW or rescan its plug-in list. Black Magic is an **effect**, mono or stereo in and out, with an optional sidechain input: choose it from **Desert Moon Audio**. It is at home on a vocal, a bass, a drum bus or the whole mix.

2.1 Five Minutes In

Insert Black Magic and press play. It loads on **Front Panel**. Turn **THRESHOLD** clockwise until the meter starts to swing: the needle rests at 0 on the right and moves left by the number of dB the unit is turning the program down. Three to six dB on the loud moments is a classic setting; ten or more is an effect.

Bring the level back with **OUTPUT**, or flip **MATCH** on: the output is then held at the loudness of the input, so what you hear is what the unit does to the sound and not the extra level. If it still sounds better with MATCH on, it is better.

Now turn up **DRIVE**. It pushes the program harder into the valves and takes the same amount off again afterwards, so the level and the amount of limiting stay where they were and only the color changes: thicker, a little grittier, bigger in the low end.

TIME CONSTANT decides how the unit moves. **VAR** follows the ATTACK and RELEASE knobs. **AUTO** lets a single peak go quickly and a sustained passage slowly, which suits a voice or a mix. **.5, 1, 2** and **4** are the fixed leveling positions: slow, even and almost invisible.

2.2 Resizing

Drag the window's corner. The panel keeps its shape, every control scales together, and the size is remembered with the session.

> **DEFAULTS**
> Double-click any knob to send it back to rest. POWER is the host's own bypass; with it off the pilot lamp goes out and the program passes untouched, in time with the processed signal.

1.2 The 14-Day Trial

Black Magic runs **fully featured for fourteen days** from the first time it loads — every stage, every control, every preset, nothing held back. A strip along the bottom edge of the panel — **FREE TRIAL · 14 DAYS LEFT** — counts the days down. If the trial runs out before you activate, audio passes through dry: your track is still heard, unprocessed, and a session opened later is never damaged. Licenses are sold at **desertmoonaudio.com**.

1.3 Entering Your License

Your license key is in the order email: one long line beginning `DMA1-`. Click the trial notice, paste the key in and press **Activate**. The first activation on a machine takes one quick internet check, which registers this computer against your key; from then on the plug-in runs fully offline, apart from its once-a-day update check. There is no account and no dongle. One key covers every format — Audio Unit, VST3 and AAX — and is kept in `~/Library/Desert Moon Audio/Black Magic/` on macOS.

1.4 Seats and Moving Machines

One key activates **up to four computers you personally own** — a studio desktop, a laptop and a couple of spares. To move to a new machine, open the preset bar's menu on the old one and choose **Deactivate This Machine…**; that hands the seat back at once and returns that copy to trial mode. If the old machine is gone — sold, wiped or dead — write to **info@desertmoonaudio.com** with your order number and the seat is released by hand.

1.5 Updates and Support

Updates are free for as long as you own the plug-in. Black Magic checks once a day for a newer version and shows a small notice on the panel when one exists; download the current installer and run it over the top — nothing needs to be uninstalled and your presets stay where they are. Questions, problems or a lost key: **info@desertmoonaudio.com**.

3 The Panel at a Glance



	PART	WHAT IT DOES
1	Preset bar	Step through presets, save your own, A/B, undo and redo, and the menu with the manual and your license.
2	THRESHOLD	Where limiting starts. Clockwise is a lower threshold and more limiting.
3	Meter	dB of gain reduction and nothing else. It rests at 0 on the right.
4	MATCH	Holds the output at the loudness of the input, for an honest comparison.
5	TIME CONSTANT	VAR (the knobs), AUTO, or the fixed leveling positions .5, 1, 2 and 4.
6	DRIVE	How hard the program hits the valves. Color, not level.
7	ATTACK	How quickly the unit turns down. Used on VAR and AUTO.
8	Pilot lamp	Lit while the unit is in circuit.
9	POWER	The host's bypass, aligned so nothing jumps when it is switched.
10	RELEASE	How quickly the unit lets go. Used on VAR and AUTO.
11	OUTPUT	Make-up gain after the limiter.
12	SERVICE	Turns the panel over to the adjustments an engineer sets once and leaves (section 5).

4 The Front Panel Controls



The top row at work: THRESHOLD, the gain-reduction meter, MATCH and TIME CONSTANT.

CONTROL	RANGE	NOTES
THRESHOLD	0 to 60 dB below full scale	Where limiting starts. The ratio is gentle just over the threshold and stiff further in, so a little more THRESHOLD is always a little more hold, never a wall.
DRIVE	0 to 30 dB	Pushes the program into the valves and takes the same gain off again after the transformer: the level and the threshold stay put and the color changes.
ATTACK	1 to 200 ms	Slow lets the front of a note through before the unit turns down; fast catches it. Used on VAR and AUTO.
RELEASE	0.01 to 2 s	Fast is lively and audible; slow is smooth. Used on VAR and AUTO.
TIME CONSTANT	VAR, AUTO, .5, 1, 2, 4	VAR uses the two knobs. AUTO releases a single peak at the RELEASE setting and a sustained passage slowly. The numbered positions are fixed leveling speeds: attack and release both that many seconds.
OUTPUT	-12 to +24 dB	Make-up gain.
MATCH	on / off	Brings the output to the loudness of the input while you listen. It is a listening aid: it is not applied to an offline bounce.
POWER	on / off	The host's bypass. The dry signal is delayed by the unit's own latency, so switching it never shifts the track in time.

4.1 Reading the Meter

The meter shows gain reduction only. At rest the needle sits at 0 on the right; as the unit works it swings left. The red band from 10 to 20 marks heavy limiting. If the needle never returns to 0 between phrases, the release is too slow or the threshold too low for the material.

> **NOTHING CLICKS**
>
> Every control glides or fades when it is moved, by hand, by a preset or by automation, so a change in the middle of a take is safe.

5 Behind SERVICE



Press SERVICE and the panel turns over to its bench adjustments. Press it again to come back.

CONTROL	RANGE	NOTES
WARMTH	0 to 100 %	The unit has a voice of its own: a broad lift low down and another at the very top. WARMTH takes that voice away again for a flatter result.
AGE	0 to 100 %	Valve mismatch, component spread between the channels and slow drift. Above 60 % the valves' own hiss and a trace of mains hum come up. Silent at the default.
SIDECHAIN	20 to 500 Hz	The high-pass filter in front of the detector. Raise it so a kick drum or a bass stops pulling the whole program down.
MIX	0 to 100 %	Blends the limited signal with the untouched input, in time with each other, for parallel compression inside the unit.
LIMIT / LINE	switch	LINE takes the limiter out of circuit: what is left is a tube line amplifier, for color without gain reduction.
LINK / DUAL	switch	LINK drives both channels from one control voltage, so the stereo picture does not move. DUAL is two separate units.
KEY EXT / INT	switch	EXT makes the detector listen to the host's sidechain input instead of the program.
LISTEN	on / off	Hear what the detector hears, after its filters, while you set SIDECHAIN.

5.1 When to Reach for Them

A drum bus that pumps on the kick: raise SIDECHAIN to 150 Hz or so and switch to LINK. **A vocal that should stay natural:** bring MIX down to 40 % and lower the threshold instead. **A track that only needs color:** LINE, then DRIVE to taste.

6 What Is Inside

6.1 The Valves

The input triode is a single-ended stage. It adds mostly second harmonic, and the amount climbs steadily with level, so there is no point where the color switches on. Driven hard, the stage shifts its own bias the way a real one does and stays rich instead of squaring off.

The gain cell is a push-pull pair of variable-mu valves. Push-pull cancels the even harmonics and keeps the odd ones, and the deeper the reduction, the more the valves bend the signal on their grids: the unit sounds different when it is working hard, as the hardware does.

The output pair and the transformer come last. The transformer's core saturates on what the bass asks of it and leaves the top alone, which is where the weight comes from.

6.2 The Sidechain and the Timing

The detector hears the program through a coupling capacitor (the SIDECHAIN control) and a gentle roll-off at the top, so the unit leans on the midrange, where the ear judges loudness. A storage capacitor charges and drains toward the reduction each moment asks for; ATTACK and RELEASE set how fast. AUTO adds a second, slow capacitor: a single peak is let go at the RELEASE setting and a sustained passage slowly.

6.3 Clean Where It Should Be

Valve stages make harmonics, and in a digital system harmonics that go too high fold back as noise that has nothing to do with the music. Black Magic runs its valves at four times the session's sample rate while you play and at eight times when the host bounces offline, with the same latency either way, so a bounce lines up exactly as playback did.

6.4 Latency

40 samples at 44.1 and 48 kHz, 38 samples at higher rates. It is reported to the host exactly, so the track stays in time, and POWER, MIX and the trial's pass-through all use an input delayed by the same amount.

> **THE DEFAULT SETTING**
>
> Black Magic loads as two units (DUAL) with a little make-up gain already dialed in, so it is doing something sensible the moment it is inserted.

7 Presets, A/B, Undo and Getting Sounds

7.1 The Preset Bar

The arrow keys step through every preset, factory and yours. Click the name card for the whole list, **Save As…**, **Delete** and **Open Preset Folder**. **A/B** holds two scratch settings: tweak one, flip to the other, flip back. **Undo** and **redo** walk every change, grouped so a knob drag is a step or two, not a hundred.

7.2 Factory Presets

Front Panel How it loads: two units, a touch of make-up, ready to set.	**Lead Vocal: Forward** A firm hold with a quick release. The voice steps to the front.
Lead Vocal: Intimate Lower threshold, slower release, the unit's lift eased back.	**Vocal: Parallel Crush** Heavy limiting mixed in at a third under the untouched voice.
Drums: Room Smash Fast and deep with the sidechain raised and the channels linked.	**Drums: Parallel Weight** The same idea at forty per cent MIX: size without losing the hits.
Snare: Crack A slow attack lets the stick through, a fast release brings up the ring.	**Bass: Held and Fat** Steady level, a long release and the low lift left in.
Bass: Valve Growl Eighteen dB of DRIVE into a light threshold.	**Acoustic Guitar: Level** AUTO timing and a gentle hold. Even strums, natural decay.
Electric Guitars: Glue Linked, medium timing, a little color.	**Piano: Bloom** The 1-second leveling position: the sustain comes up as the note dies.
Mix Bus: Gentle Hold The 2-second position, linked, sidechain at 150 Hz. A dB or two.	**Mix Bus: Parallel Lift** A deep hold at a quarter MIX under the whole mix.
Broadcast Leveler The 4-second position. Rides a whole program the way a station did.	**Line Amp: Valve Warmth** LINE: no limiting, twelve dB into the valves.
Line Amp: Driven Iron LINE with DRIVE at twenty and AGE up: the transformer working.	**Line Amp: Air and Weight** LINE at low DRIVE: just the unit's own lift at both ends.

7.3 A Vocal That Stays Put

AUTO, THRESHOLD until the meter reads four to six on the loud lines, OUTPUT to match. If the breaths come up too far, slow the RELEASE.

7.4 A Mix That Holds Together

LINK, SIDECHAIN at 150 Hz, the 2-second position and a dB or two on the meter. Check it with MATCH on: it should sound more finished, not smaller.

8 Specifications

ITEM	VALUE
Formats	Audio Unit, VST3 and AAX on macOS 10.15 and later, Apple Silicon and Intel (universal); VST3 and AAX on 64-bit Windows 10 and later
Channels	Mono or stereo in and out, with an optional mono or stereo sidechain (key) input
Sample rates	44.1 kHz to 192 kHz
Latency	40 samples at 44.1 and 48 kHz, 38 samples above; the same when rendering. Reported to the host exactly; POWER and MIX are aligned to it
Limiter	Variable-mu gain cell, soft ratio rising to about 9:1; threshold 0 to 60 dB below full scale; attack 1 to 200 ms; release 0.01 to 2 s; AUTO release; fixed leveling positions of .5, 1, 2 and 4 seconds
Signal path	Input triode, push-pull variable-mu pair, push-pull output pair, output transformer; DRIVE 0 to 30 dB, compensated after the transformer
Sidechain	High-pass 20 to 500 Hz; internal or external key; LISTEN; LINK or DUAL
Oversampling	Linear-phase, 4x while playing and 8x while rendering at 44.1 and 48 kHz; 2x and 4x above
Processing	32-bit float in and out, double precision inside; every control glides or fades
Presets	Eighteen factory presets; user presets as files; A/B; undo and redo
License	14-day fully featured trial; offline key, four seats

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