DOTMATRIX

LIGHTWEIGHT ENGINEERING

DOTMATRIX / LIGHTWEIGHT AUDIO PLUGINS

HIZUMICOMP

A character compressor:
eight curves, an opto cell, the FET trick and three colours.



HizumiComp by Dotmatrix

USER GUIDE | VERSION 1.0.1 | AU | VST3 | CLAP | macOS 10.14+ | INTEL + APPLE SILICON

Hizumi is Japanese for distortion. One gain stage that behaves like the classics, each part drawn from their schematics.

DOTMATRIX

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— ABOUT HIZUMICOMP

HizumiComp is a character compressor from Dotmatrix. Hizumi is Japanese for distortion, and it takes after the idea Dave Derr built the Distressor on: one gain stage that can behave like several classic compressors and add their colour. It isn't a copy of any one box. Each part is drawn from a classic unit's schematic or its maker's published data. Eight curves set threshold, knee, ratio and detector together. 2:1 eases in over a 30 dB knee with a true-RMS detector, from the dbx school. 3:1, 4:1 and 6:1 get steadily tighter towards limiting. 20:1 is a short-knee limiter, and SLAM is a brick wall whose release lets go fast and then slows. 10 OPTO is a separate detector modelled on the LA-2A's light cell: half the reduction lets go in about a tenth of a second, and the rest takes longer the harder it has been working. ALL-IN brings the 1176's all-buttons-in trick to any ratio. Its gain element is the FET voltage divider from the 1176 schematic, and the gain lags and overshoots on transients. A colour stage after the gain element gives a clean path, even-order warmth that grows as it compresses (DIST 2), or tape-like odd-order flattening (DIST 3), with 1 % THD and REDLINE lamps. A 3rd-order Bessel high-pass can go in the audio path. The detector has its own high-pass, a 6 kHz emphasis for harsh notes, and a stereo link. MIX blends in the dry signal for parallel compression. A glass draws the selected curve with your signal riding it, next to a 16-step gain-reduction ladder. The oversampler (4x by default, up to 8x) keeps the saturation free of aliasing. Twenty-three factory presets cover the classic settings, vocals, drums, instruments and colour, and you can save your own. HizumiComp runs as an AU, VST3 and CLAP plug-in, universal for Apple Silicon and Intel Macs on macOS 10.14 or later, with a dark or light panel you can resize from 60 to 200 %. Distressor, 1176, LA-2A and dbx are trademarks of their owners. Dotmatrix is not affiliated with or endorsed by Empirical Labs, Universal Audio or dbx.

— QUICK FACTS

Type	A compressor and limiter with built-in harmonic colour, in one audio effect, mono or stereo.
Formats	Audio Unit, VST3 and CLAP effects. Universal: Apple Silicon and Intel, macOS 10.14 Mojave or later on Intel, macOS 11 or later on Apple Silicon.
From the sources	The 1176 schematic (FET gain element, attack network), the LA-2A manual (the opto cell's release), dbx 160 data (RMS detector) and the Distressor manual (ranges, curves, THD).
Clean	Oversampling 4x by default (none, 2x, 4x or 8x). The saturation stages stay free of aliasing at 4x.
Presets	23 factory presets: start, the classics, vocals, drums, instruments and colour. Your own are saved in ~/Music/HizumiComp Presets.
Identity	Manufacturer Dotmatrix (Dtmx). AU code: Hzmc.

SECTION 01

Getting started

Put it on a track, set everything to 5, then drive it.

— NEW IN VERSION 1.0.1

1.0.1	The 2:1 detector is now modelled on the dbx 160: one 36 ms RMS averager, so the attack speeds up the harder a note hits (15 / 5 / 3 ms for 10 / 20 / 30 dB) and the release runs at 120 dB a second. At ATTACK and RELEASE 5 it is the 160; turn them to lean it faster or slower. The detector also ignores rumble below 20 Hz, as the 160X does.
1.0	The first release: eight curves (2:1 RMS to SLAM), 10 OPTO, ALL-IN, CLEAN / DIST 2 / DIST 3 with THD lamps, audio and detector filters, stereo link, MIX, the live curve and gain-reduction ladder, glowing feature dials, dark and light panel, 23 factory presets.

— INSTALLING

Copy each plug-in from the download's **Plug-Ins** folder into its folder: **~/Library/Audio/Plug-Ins/Components** (Audio Unit), **~/Library/Audio/Plug-Ins/VST3** and **~/Library/Audio/Plug-Ins/CLAP**. The release is not yet signed through Apple's developer program, so macOS needs one Terminal line before it will load it; **READ ME FIRST.txt** in the download has the exact steps. Logic Pro checks new Audio Units the first time it starts; HizumiComp appears under **AU Effects > Dotmatrix**.

— FIRST STEPS

1	**Insert it**	Put HizumiComp on a track (in Logic: Audio FX > Dotmatrix > HizumiComp).
2	**Start at 5 5 5 5**	It opens on the **5 5 5 5** preset: every big knob on 5, ratio 6:1, CLEAN. At 5 and 5, INPUT and OUTPUT cancel, so it is unity below the knee.
3	**Drive it**	Turn **INPUT** up until the gain-reduction ladder moves. The ratios set their own thresholds, so INPUT decides how hard it works. Watch the dot ride the curve on the glass.
4	**Shape the envelope**	**ATTACK** under 4 catches transients; above 5 lets the front of a drum through. **RELEASE** fast for energy (and grit on low notes), slow for smoothness.
5	**Add colour**	**DIST 2** warms as it compresses; **DIST 3** flattens like tape. Keep an eye on the 1 % THD and REDLINE lamps, and use **MIX** for parallel compression.

— BASIC HANDLING

Dials	Drag up or down. Double-click to reset. Click the value under a dial to type one. The big dials read 0 to 10.5, like panel numbers; the value adds what the number means (dB or time).
Glowing dials	INPUT, OUTPUT and MIX have a light ring that grows around the knob with the value and glows brighter the further it goes.
Keys	The lit key is the one chosen: one ratio, one colour. ALL-IN, AUDIO HP, DET HP, BAND 6K, LINK and BYPASS light when on.
The glass	Draws the selected curve as set (INPUT, ratio, OUTPUT), host level in to host level out, with the 1:1 line dashed and the knee marked. The orange dot is your signal, riding the curve.
Ladder and lamps	Gain reduction from 1 to 26 dB, green to yellow to red, with the peak held for a second. 1 % THD (yellow) and REDLINE 3 % (red) show how hard the colour stage is working. IN and OUT bars show peak level.
LCD	Gain reduction in dB, held for a second. Click it for the output peak in dBFS.
Help line	Hover over any control and the strip at the bottom of the panel says what it does.
Light and size	LIGHT switches to the light panel and back; every window remembers it. Drag the window's corner for any size from 60 to 200 %.

SECTION 02

The panel

The meter bridge across the top, then the bays left to right: dynamics, ratio, colour, detector and output.



Header	LIGHT, the preset name with its arrows, SAVE, and the LCD (gain reduction, or click for the output peak).
Meters	The curve glass with the signal dot, the gain-reduction ladder, the 1 % THD and REDLINE lamps, IN and OUT bars, and a read-out of the settings.
Dynamics	INPUT, ATTACK, RELEASE and OUTPUT.
Ratio	Eight curves and ALL-IN.
Colour	CLEAN, DIST 2 or DIST 3, and AUDIO HP.
Detector	DET HP, BAND 6K and LINK.
Output	MIX, BYPASS and oversampling.

SECTION 03

Dark or light

The same panel, lit two ways. LIGHT switches it; drag the window's corner for any size from 60 to 200 %.

— LIGHT

A light panel with light grey dials and keys, for bright rooms. The glass, the LCD, the lamps and the glowing rings stay lit the same way.



SECTION 04

Where it comes from

HizumiComp follows Dave Derr's idea for the Distressor: one gain stage that can behave like several classics. It isn't a copy of the Distressor's circuit, which has never been published. Each part below comes from a classic unit's schematic or its maker's own data.

— THE FET LIMITER: ALL-IN, AND THE PEAK DETECTOR

On the 1176 schematic (Rev D, low-noise), gain reduction is a voltage divider: a 27k resistor over a field-effect transistor used as a variable resistor. A network of two 2.2 megohm resistors feeds half the voltage across the FET back onto its gate, which cancels most of its distortion. ALL-IN uses that divider. With all ratio buttons in, the bias moves and some of that distortion comes through, mostly 2nd harmonic. The knee comes 4 dB earlier, and the gain path lags and overshoots on transients, which is the "lag time on the attack" in Universal Audio's description. The same schematic sets the attack network: 470 ohms plus a 25k pot into 0.022 microfarads, 10 to 570 microseconds. That range sits inside ATTACK 0 to 4. The full-wave rectifier and capacitor detector there is also how the peak detector on 3:1 to 20:1 works.

— THE OPTO CELL: 10 OPTO

The 1966 Teletronix LA-2A manual describes its cell: a release of about 60 milliseconds for the first half, then 0.5 to 5 seconds for the rest, depending on how much reduction came before, and up to 40 dB of reduction. 10 OPTO models an electroluminescent panel lighting a cadmium-sulphide cell in a feedback loop. The cell has a fast part and a slow part, each carrying half the reduction in dB. The slow part remembers how long and how hard it has been lit. In tests, half the reduction lets go in about 0.1 s; complete release takes 0.9 s after a short burst and 2.5 s after 8 seconds of work. RELEASE stretches the memory up to about 20 s.

— THE RMS SCHOOL: 2:1

2:1 uses the dbx 160's true-RMS detector: one 36 ms averager, so a big jump is caught in 3 ms and a small one in 15, and the release runs at a steady 120 dB a second. ATTACK and RELEASE at 5 give you the 160 exactly; lower is quicker, higher is slower. The knee is 30 dB long, so it never quite limits.

— THE DISTRESSOR MANUAL: RANGES, CURVES AND COLOUR

The control ranges (attack 50 microseconds to 30 ms, release 50 ms to 3.5 s), the set of curves, the logarithmic release on SLAM, the 3rd-order Bessel audio high-pass (-3 dB at 65 Hz) and the distortion ranges (0.025 to 0.3 %, 0.05 to 3 %, 0.1 to 20 %) come from the Distressor manual. The knee widths on 3:1 to 6:1, the detector filters and the exact shape of the colour curves are our own, fitted to those figures.

SECTION 05

Dynamics

The four big dials. Each reads 0 to 10.5.

— CONTROLS

CONTROL	RANGE	DEFAULT	WHAT IT DOES
Input	0 to 10.5	5 (+10 dB)	5 dB per number: unity at 3, +10 dB at 5, +37.5 dB at 10.5. It drives the signal into the curve.
Attack	0 to 10.5	5	50 microseconds at 0 to 30 ms at 10. Under 4 is FET territory.
Release	0 to 10.5	5	50 ms at 0 to 3.5 s at 10. In 10 OPTO it sets the cell's memory instead, up to about 20 s.
Output	0 to 10.5	5 (-10 dB)	5 dB per number. At 5 it cancels INPUT 5, so 5 / 5 is unity below the knee.

GRIT FROM RELEASE A fast release lets the detector follow each cycle of a low note, and that ripple adds distortion. At 6:1, an 80 Hz note measures about 3 % THD at release 0 and 0.4 % at 5. Use it, or turn RELEASE up to clean it.

SECTION 06

Ratio

Each ratio sets the threshold, the knee, the ratio and the detector together.

— THE CURVES

CONTROL	RANGE	DEFAULT	WHAT IT DOES
1:1	no reduction		The signal still goes through the colour stage. With ALL-IN it becomes the all-buttons curve.
2:1	dbx RMS, 30 dB knee		Eases in and never limits.
3:1	18 dB knee		Gentle, general purpose.
4:1	10 dB knee		Tightens towards 10:1 on the loudest peaks.
6:1	7 dB knee	default	The place to start. Tightens towards 20:1, so peaks get held musically.
10 OPTO	opto cell		The LA-2A model, with its own feedback detector. ATTACK 10, RELEASE 0 is the classic setting.
20:1	3 dB knee		A short-knee peak limiter.
SLAM	brick wall		Holds normal signals within about a dB. The release lets go quickly, then slows. Output is 1.5 dB lower.
ALL-IN	on / off	off	The FET all-buttons trick, on any ratio. Keep ATTACK under 4.

ROOM MICS SLAM with INPUT high and RELEASE under 3: the room swells up behind the close mics. Turn LINK off on a stereo pair for a wider image.

VOCALS 6:1 or lower, ATTACK 5, RELEASE 4. 10 OPTO for a classic, even level.

SECTION 07

Colour

The distortion generator, after the gain element.

— CONTROLS

CONTROL	RANGE	DEFAULT	WHAT IT DOES
Clean	key	on	Only the gain element's own trace: about 0.01 %, rising a little as it compresses.
Dist 2	key	off	Even-order warmth, mostly 2nd harmonic, that grows with the reduction. About 1.3 % at 6:1 working hard.
Dist 3	key	off	Odd-order flattening from the output level, like tape, with some 2nd left in. From 0.3 % gently up to about 18 % driven.
Audio HP	on / off	off	A 3rd-order Bessel high-pass in the signal: -3 dB at 65 Hz, 18 dB/oct. Clears subs off a voice.

THE LAMPS 1 % THD lights at 1 %, REDLINE at 3 %. On a single instrument 3 % often sounds fat rather than distorted; on a mix it is obvious.

TAPE 2:1 with DIST 3 and 1 to 3 dB of reduction, fast attack and release.

SECTION 08

Detector

The sidechain: what the compressor listens to. You never hear these filters.

— CONTROLS

CONTROL	RANGE	DEFAULT	WHAT IT DOES
Det HP	on / off	off	A 100 Hz high-pass in the detector, so kicks, plosives and bass don't pump everything else.
Band 6K	on / off	off	+12 dB around 6 kHz in the detector, so harsh, edgy notes get pushed back harder.
Link	on / off	on	Both channels take the same reduction, from the louder side, so the stereo image holds. Off, each side works on its own.

PUMPING LOWS If a bass or kick drags the whole track down, press DET HP or slow the attack.

SECTION 09

Output

Blend, bypass and quality.

— CONTROLS

CONTROL	RANGE	DEFAULT	WHAT IT DOES
Mix	0 to 100 %	100 %	Blends the dry signal back in, sample-aligned: parallel compression without a second track.
Bypass	on / off	off	Bypasses everything, latency-matched, so A/B comparisons line up.
Oversampling	None, 2x, 4x, 8x	4x	4x keeps DIST 3 and ALL-IN free of aliasing; 8x for the last bit of clean; None for the least CPU.

CPU At 4x a stereo instance uses about 3 to 4 % of one core on Apple Silicon.

SECTION 10

Presets

Twenty-three factory presets. Start has the 5 5 5 5 line-up; Ancestors has the classic settings; Vocals, Drums and Instruments are starting points for those sources; Colour has tape saturation and a reverse swell. SAVE stores your own in ~/Music/HizumiComp Presets; they appear in the menu under User presets.

CATEGORY	24 PRESETS
Start	5 5 5 5, Warm Through (1:1)
Ancestors	FET 6:1 Classic, FET All-In, Opto Leveller, Over Easy, Vari-Mu Glue, Tape Kiss
Vocals	Vocal Tracking, Vocal Forward, Vocal Edge Tamer
Drums	Snare Snap, Kick Opto, Room Slam, Room Slam Grunge, Drum Bus Parallel
Instruments	Bass Even, Bass Amp (All-In), Acoustic Glass, Guitar Solo Sustain, Piano Bite
Colour	Tape Saturate, Reverse Swell
Yours	Every preset you save, listed under User presets

— RECIPES

01	**Classic FET vocal**	**FET 6:1 Classic**: 6:1, ATTACK 2, RELEASE 4. Fast and bright.
02	**Opto leveller**	**Opto Leveller**: 10 OPTO, ATTACK 10, RELEASE 0, DET HP on. Smooth and even.
03	**Room slam**	**Room Slam**: SLAM, INPUT 10, RELEASE 2.5, LINK off. Run the ladder off the end.
04	**Bass amp**	**Bass Amp (All-In)**: SLAM with ALL-IN, fast attack, 60 % MIX. Each note saturates like an amp.
05	**Tape kiss**	**Tape Kiss**: 2:1, DIST 3, fast attack and release, a few dB of reduction.

SECTION 11

Reference and troubleshooting

— TECHNICAL NOTES

Signal flow	INPUT, the audio high-pass, the gain element (VCA, or the FET divider with ALL-IN), the colour stage, a soft rail at +6 dBFS, OUTPUT, then the dry MIX. The detector listens after the audio high-pass, through its own filters.
Clean by design	A linear-phase half-band oversampler, and a 12 kHz, 24 dB/oct low-pass on the gain control so the detector's ripple doesn't alias. At 4x, DIST 3 driven measures -138 dBc of aliasing.
Latency	The oversampling filters only: 105 samples at 4x at 44.1 kHz. HizumiComp reports it to the host, which compensates. None has no latency.
Sessions	A project stores every parameter, the preset and the LCD view. Presets are small XML files.
Compatibility	Universal (Apple Silicon and Intel). VST2 is not available: Steinberg no longer licenses it. CLAP is built with the open-source clap-juce-extensions.
Trademarks	Distressor is a trademark of Empirical Labs, 1176 and LA-2A of Universal Audio, dbx of its owner. Dotmatrix is not affiliated with or endorsed by any of them; the names only identify the sources.

— TROUBLESHOOTING

Nothing happens	The ratio is 1:1, or INPUT is too low to reach the knee. Pick 6:1 and turn INPUT up until the ladder moves.
It suddenly got loud	1:1 does no compression. Choose another ratio, or bring OUTPUT down.
Low notes crackle or pump	The attack and release are very fast. Slow the attack, raise RELEASE, or press DET HP.
REDLINE is on all the time	The colour stage is working hard. Lower INPUT or OUTPUT, or use DIST 2 or CLEAN.
It does not appear in Logic	Run the Terminal lines in READ ME FIRST.txt, then restart Logic. In Logic > Settings > Plug-in Manager, select it and click Reset & Rescan Selection.
My presets are missing	They live in ~/Music/HizumiComp Presets. Copy the .xml files there on another Mac.



HizumiComp by Dotmatrix

Lightweight audio plugins. Documentation for version 1.0.1.