BACKWARD PRODUCTION

BW FIVE

DYNAMIC EQ

VERSION 2.0.0



User manual · VST3 · AAX · Windows 64-bit

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1. Introduction

BW Five Dynamic EQ is a **10-band dynamic equaliser**. Each band is a bell or a shelf filter that reacts to the level of the signal in its own frequency range: it can turn itself down when that range is too loud (resonances, sibilance, boxiness, harshness) or turn itself up when it is weak. Every band has its own **Threshold, Ratio, Attack and Release**, a **Min / Max** limit on how far the dynamics may move it, and its own **Listen**, **Auto threshold**, **Mid / Side** and **external sidechain** options. A large display shows the spectrum before and after the EQ, with what is removed in red and what is added in green. It uses the same interface platform as BW Three and BW Four.

This manual describes **version 2.0.0**, the first release.

2. Installation

Run **BW_Five_Dynamic_EQ_v2.0.0_Setup.exe** (administrator rights required) and choose VST3, AAX or both. Or copy the files by hand:

VST3: `C:\Program Files\Common Files\VST3\BackWard\BW Five Dynamic EQ.vst3`
AAX: `C:\Program Files\Common Files\Avid\Audio\Plug-Ins\BW Five Dynamic EQ.aaxplugin`

Rescan the plug-ins in your host. Click the BackWard logo in the plug-in: the About card must show **Version 2.0.0**. Close the host before replacing an installed copy, otherwise the file is locked.

> **AAX.** The AAX build is not signed. A commercial Pro Tools needs a PACE / iLok signature; a development Pro Tools loads it as is.

System requirements: Windows 10 or 11 (64-bit), a VST3 or AAX host, a graphics driver with OpenGL support (recommended).

3. Quick start

1. Insert BW Five Dynamic EQ on a track or a bus. Pick a preset in the footer, or start from **Init**.
2. Click a band number (1 to 10) at the top of the centre card, then set its **Frequency**, **Q** and **Gain**. Or click and drag a dot directly on the analyser.
3. Press **LISTEN** and move the frequency to hear what the band hears. Press it again to return to the sound.
4. Press **AUTO**, play the passage the band should work on for 4 seconds: the **Threshold** is set for you. Adjust **Ratio**, **Attack** and **Release**.
5. Limit the action with **MIN** and **MAX**, then compensate the level with **Output**.

For a de-esser in one click: select a band and press **DE-ESS**.

4. The interface at a glance



Top rail	Bypass (round button, top left) and the gear (top right) that opens OPTIONS | HELP.
IN / OUT strips	Stereo level strips on each side: level bar, hold tick, values in dBFS.
Display	The large card in the centre. Switch **ANALYZER | TIME** at its top right; a small selector next to it picks the analyser view (PRE, POST, PRE+POST, DELTA).
BAND DYNAMICS	Left card: Threshold, Ratio, Attack, Release of the selected band.
Centre card	The 10 band buttons, the big FREQUENCY, Q and GAIN knobs, the TYPE, DIRECTION and CHANNEL switches and the pills ON, LISTEN, AUTO, SIDECHAIN, DE-ESS.
BAND RANGE / ALL BANDS	Right card: MIN and MAX of the selected band, then INPUT and OUTPUT, which act on the whole plug-in.
Footer	Preset bar (arrows, name, Save, A / B), the BackWard logo and the plug-in name.

5. The 10 bands

The row of ten buttons at the top of the centre card: each shows its number and its frequency (or "off"). A band that is on is amber.

- **Click** a number to select the band: the knobs, switches and pills then edit this band (white outline).
- **Double-click** a number to switch the band on or off.
- Under a number, a small bar shows the live movement of the band: red when it turns down, green when it turns up.

The bands are in series. By default all are off: band 1 is a low shelf, band 10 a high shelf and the others are bells, at 60 Hz, 120 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 6.5 kHz, 10 kHz and 14 kHz.

6. Filter: Frequency, Q, Gain, Type

FREQUENCY	20 Hz to 20 kHz, logarithmic. The centre of a bell, the corner of a shelf. The knob is slow on purpose; hold Ctrl for finer steps.
Q	0.2 to 10. The width of a bell: a low Q is wide and gentle, a high Q is narrow and surgical.
GAIN	-18 to +18 dB. What the band does when nothing moves it. The dynamics then add to this value (see 7).
TYPE	**BELL**; **L-SHELF** (everything below the frequency); **H-SHELF** (everything above it).

With the gain at 0 dB the band does nothing until the dynamics move it: this is a pure dynamic band. With a gain it is a normal EQ band that also moves.

7. Dynamics: Threshold, Ratio, Attack, Release, Direction

Each band has its own detector, which listens to the signal through a filter at the frequency and the Q of the band. The detector level is compared to the Threshold of the band, not to the level of the whole signal.

THRESHOLD	-60 to 0 dB. The level of the band above which it reacts.
RATIO	1:1 to 20:1. How strongly: for every dB above the threshold, the band moves by (1 - 1/ratio) dB. The knee is soft (6 dB).
ATTACK	0.1 to 100 ms. How fast the band reacts. Short for sibilance, longer to let transients pass.
RELEASE	5 ms to 1 s. How fast it comes back.

DIRECTION	**DOWN**: the band turns down when the range is loud (de-esser, resonance control, compressor). **UP**: the band turns up when the range is loud (expander, exciter).

The detector of the two channels is linked: both channels get the same movement, so the stereo image does not shift.

8. Min and Max reduction

MAX (0 to 24 dB) is the most that the dynamics can move the band, however loud the signal gets. **MIN** (0 to 24 dB) is the least that is applied once the band works: with a MIN of 3 dB, as soon as the level crosses the threshold the band is already 3 dB away from its static value. MIN at 0 means nothing is forced. The band stays musical because it never goes further than you decided.

9. LISTEN

LISTEN plays only what the detector of the selected band hears, so you can find a sibilance or a resonance by ear and place the Frequency and the Q on it. Select another band or press LISTEN again to go back to the normal sound. LISTEN is for setting up: do not leave it on when you print.

10. AUTO threshold

AUTO learns the threshold of the selected band. Press it, then play the part of the track that the band should work on (for example a few words of the vocal). During about **4 seconds** the plug-in measures the level of the detector, ignoring silence. It then sets the Threshold just below the peaks: the level that the loudest 15 % of the time exceed, minus 1 dB. The AUTO pill lights up while it listens and switches off by itself. If nothing was played, the Threshold is not changed. Fine-tune it by a few dB afterwards.

11. DE-ESS

DE-ESS turns the selected band into a de-esser: bell at 6.5 kHz, Q 2, direction DOWN, threshold -30 dB, ratio 6:1, attack 0.5 ms, release 50 ms, MAX 10 dB, stereo. It is a starting point: use LISTEN to find the sibilance, then AUTO for the threshold. The pill stays lit while the selected band works as a de-esser (on, bell, down, between 4 and 12 kHz).

12. Channel: Stereo, Mid, Side

The CHANNEL switch decides where the band works: **STEREO** (the whole signal), **MID** (only the centre, for example the vocal) or **SIDE** (only the width, for example the cymbals and the room). The detector follows the same choice.

13. External sidechain

When the host offers the second input of the plug-in (**Sidechain**), the band can react to it instead of its own signal: switch on **SIDECHAIN** for the band. Use it, for example, to let the bass duck a band of the guitars, or a de-esser band hear a clean copy of the vocal. Without a signal on that input, the band does not move.

14. The analyser

The ANALYZER view shows the spectrum on a logarithmic frequency axis (20 Hz to 20 kHz) with the amber EQ curve on top.

Input	Grey: the signal that enters the EQ.
Output	Violet: the signal that leaves it.
Removed	Red: between input and output, what the EQ takes away.
Added	Green: what the EQ adds.
EQ curve	Amber: the EQ as it is now, static gain plus the live movement of the dynamics. Scale on the right, -18 to +18 dB.

The small selector next to the ANALYZER | TIME switch picks what is shown: **PRE** (input), **POST** (output), **PRE+POST** (both, with red and green) and **DELTA** (only the difference, that is what the EQ does).

The bands are on the curve. The selected band has a large white dot, a soft zone showing what it covers and a label with its frequency, gain and Q. The others are small amber dots.

Drag a dot	Left and right: Frequency. Up and down: Gain.
Mouse wheel on a dot	Q.
Click a dot	Select the band.
Double-click a dot	Switch the band off.
Double-click on an empty place	Create a band there (the first free one).

15. The TIME view



The TIME switch shows the last **2, 5 or 10 seconds**: the input and output levels, and the band movements hanging from the top, with the deepest peaks marked. Hover the plot to read the values at any moment. The window length, the range and the labels are set in OPTIONS.

16. Level strips and gain

- **IN** (left) reads the signal after the Input knob, before the EQ; **OUT** (right) reads it after the EQ and the Output knob. Each strip is stereo (L and R).
- The top number is the current level in dBFS, the bottom number the peak hold. Click a strip to reset its holds.
- **INPUT** and **OUTPUT** (right card, under ALL BANDS) go from -24 to +24 dB and act on the whole plug-in.
- The round button at the top left is the global **Bypass**.

17. Presets and A/B

The footer bar: the arrows step through presets, the name opens the list, **Save** stores your own preset (a factory preset asks for a name), **A / B** keep two complete settings. The list has two sections: FACTORY and MY

PRESETS (Save as, Rename, Delete, Open folder, Init). A star after the name means modified. When you load a user preset every parameter first returns to its default, then the preset values are applied, so a preset always sounds the same.

User presets are files in `Documents\BackWard\BW Five\Presets`.

The 9 factory presets: De-Ess Male, De-Ess Female, Vocal Tamer, Mud Control, Boom Tamer, Harsh Cut, Air Lift, Box Snare, Guitar Smooth.

18. Options and Help

The gear opens one movable window with two tabs.

Analyser	Top (-6 / -12 / -18 dB), floor (-48 / -60 / -72 dB) and default view (PRE / POST / PRE+POST / DELTA).
History	Window (2 / 5 / 10 s) and range of the TIME view.
Displays	Peak labels, Inspector, Spectrum: ON / OFF.
Rendering	Normal or OpenGL (see 19). Reset peak holds. Restore defaults.
HELP	The help sections of the plug-in: bands, filter, dynamics, min and max, listen, auto, channel and sidechain, analyser, time, meters and level, presets and A/B, tips.

19. Window size and OpenGL

The window is resizable by its bottom-right corner (75 % to 200 %, fixed ratio). OpenGL rendering follows the same policy as BW Four: it is only active while the editor is on screen, a limited number of editors share it, and it switches itself off if the host crashed while it was starting (turn it back on in OPTIONS, Rendering).

20. Tips and shortcuts

- Alt+click, Ctrl+click or double-click on a knob resets it. Ctrl+drag moves it in finer steps.
- To tame a resonance: direction DOWN, narrow Q, LISTEN to find it, AUTO for the threshold, MAX at 6 dB or so.
- To lift the air only when the track is dull: H-SHELF, direction UP, Air Lift preset.
- Use DELTA to see only what the EQ does, and the TIME view to see when.
- Use A / B to compare two settings. Use MID or SIDE to treat the centre and the width separately.

21. Technical specifications

Formats	VST3 and AAX, 64-bit Windows, mono or stereo in / out, optional stereo sidechain input
Bands	10, in series: bell, low shelf, high shelf (RBJ biquad filters)

Frequency / Q / Gain	20 Hz to 20 kHz / 0.2 to 10 / ±18 dB
Dynamics	Threshold -60 to 0 dB, ratio 1 to 20, attack 0.1 to 100 ms, release 5 ms to 1 s, 6 dB soft knee, min / max 0 to 24 dB, linked stereo detector
Gain	Input and Output: -24 to +24 dB
Analyser	8192-point FFT, PRE and POST taps on the same scale
Window	1200 × 920 at 100 %, resizable 75 % to 200 %
Bundle id	`com.BackWardProduction.BWFive`

22. Parameter list (automation)

Each of the 10 bands (N = 1 to 10) has the same parameters, named "Band N ...".

Parameter	Range	Default
Input / Output	-24 to +24 dB	0 dB
Bypass	Off, On	Off
Band N On	Off, On	Off
Band N Type	Bell, Low shelf, High shelf	Bell (band 1: low shelf, band 10: high shelf)
Band N Direction	Down, Up	Down
Band N Frequency	20 Hz to 20 kHz	60, 120, 250, 500, 1k, 2k, 4k, 6.5k, 10k, 14k
Band N Gain	-18 to +18 dB	0 dB
Band N Q	0.2 to 10	1.0
Band N Threshold	-60 to 0 dB	-30 dB
Band N Ratio	1 to 20	4
Band N Attack	0.1 to 100 ms	5 ms
Band N Release	5 to 1000 ms	80 ms
Band N Min reduction	0 to 24 dB	0 dB
Band N Max reduction	0 to 24 dB	12 dB
Band N Stereo / Mid / Side	Stereo, Mid, Side	Stereo
Band N External sidechain	Off, On	Off

23. Troubleshooting

Old version shown	Close the host, replace the file, rescan the plug-ins. The About card gives the installed version.
Nothing happens	A band must be on (amber). With a static gain of 0 dB and a threshold that is never crossed, a dynamic band does nothing: use LISTEN and AUTO, or lower the Threshold.
The band moves too much	Lower MAX, raise the Threshold or lower the Ratio.
The sidechain band does not move	Route a signal to the plug-in's Sidechain input in the host.
The analyser is empty	It only shows something while audio is playing, and only when "Spectrum" is ON in OPTIONS.
Window looks flat or slow	Check OpenGL in OPTIONS, Rendering.
AAX not loaded	Commercial Pro Tools needs a signed AAX.

24. Version history

2.0.0	First release (VST3 and AAX): 10-band dynamic EQ with per-band threshold, ratio, attack, release, min / max reduction, direction, Listen, Auto threshold, Mid / Side and external sidechain; before / after analyser with removed and added areas; TIME view; DE-ESS; 9 factory presets; BW Four look and platform.

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