PaperEQ

by George Ergemlidze



User Manual · version 1.0.0

Contents

1. What PaperEQ is
2. Installing
3. Quick start
4. The page
5. Bands and shapes
6. The dots and the numbers
7. Several bands at once
8. The pen and the rubber
9. dyn, tube, trans and sidechain
10. Along the top
11. Presets
12. The tour
13. Projects, automation and latency
14. If something is wrong
15. Support and credits

1. What PaperEQ is

PaperEQ is a free seven-band EQ for mono and stereo tracks. Its window is a page of lined notebook paper: the EQ curve is drawn in ballpoint pen, the grid, the analyser and the notes are in pencil, and every band's settings are handwritten on the lines below the graph.

Each band can take one of eight shapes, and the bells and shelves each have a dynamic EQ, tube saturation and transient shaping of their own. You can move the bands one at a time or together, type exact values, or hold **alt** and simply draw the curve you want.

Requirements

System	Windows 10 or 11, 64-bit. A Mac version is on its way.
Format	VST3, for any host that loads VST3 plug-ins, and a standalone app.
Channels	Mono or stereo, with an optional stereo or mono sidechain input.
Price	Free. No account, no activation, no internet connection needed.

2. Installing

The download from georgeergemlidze.com/papereq is a zip with the installer inside.

1. Close your DAW.
2. Right-click the zip, choose **Extract All**, and open **PaperEQ Setup 1.0.0 (Windows).exe**.
3. Windows may say it protected your PC, because the installer is not signed. Choose **More info**, then **Run anyway**.
4. Choose **Plugin and standalone app** or **Plugin only**, and finish the installer.
5. Open your DAW. Most hosts find a new plug-in when they start. If yours does not, rescan its plug-ins.

The plug-in goes in the folder that hosts scan for VST3, and the app in Program Files:

```
C:\Program Files\Common Files\VST3\PaperEQ.vst3
C:\Program Files\PaperEQ\PaperEQ.exe
```

In your DAW's plug-in list PaperEQ appears under the maker **George Ergemlidze**, in the category **Fx / EQ**.

Without the installer: the site also offers the plug-in alone, as a zip. Extract it and copy the whole **PaperEQ.vst3** folder into the VST3 folder above.

Rescanning in common hosts

Ableton Live	Settings → Plug-Ins. Switch on "Use VST3 Plug-In System Folders" and press Rescan.
FL Studio	Options → Manage plugins → Find installed plugins.
REAPER	Options → Preferences → Plug-ins → VST → Re-scan.
Cubase	Studio → VST Plug-in Manager, then the refresh button.

Updating and removing

To update, close your DAW and run the newer installer: it replaces the older version, and your projects keep their settings. If the DAW is still open, the installer moves the old copy aside and the new one is used after the DAW restarts. To remove PaperEQ, use Settings → Apps → Installed apps.

> PaperEQ used to be called **Notebook EQ**. The installer removes Notebook EQ, projects that used it open with PaperEQ and keep their settings, and presets you saved under the old name are copied to PaperEQ's preset folder the first time it runs.

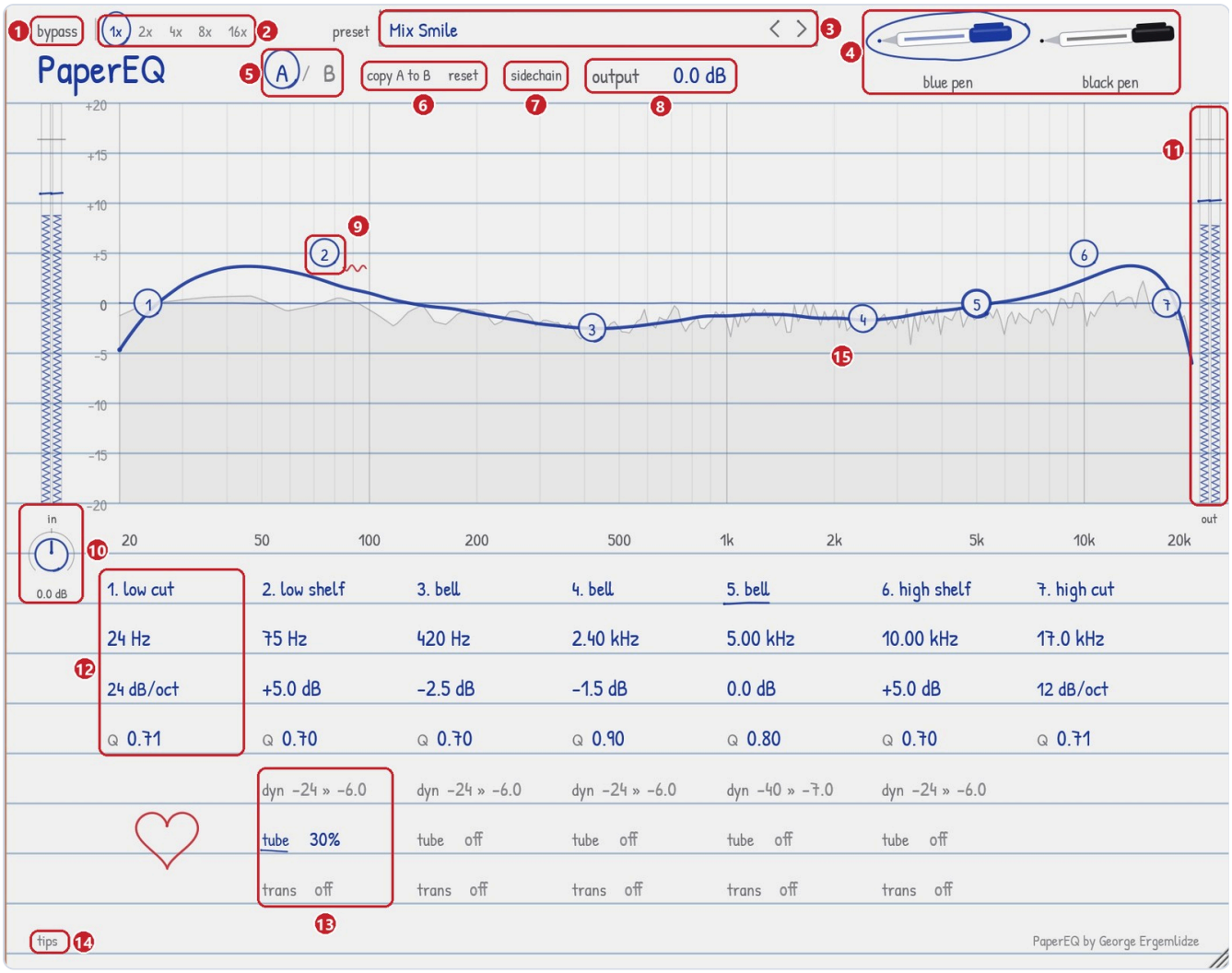
3. Quick start

1. Put PaperEQ on a track. It opens on a clean page: bands 2 to 6 switched on and flat, the low and high cuts off. The first time, a sticky note offers a short tour (section 12).
2. Play the track. The pencil shading behind the curve is the analyser: it shows what comes out.
3. Drag a dot. Left and right moves its frequency, up and down boosts or cuts. Scroll on it to make it narrower or wider.
4. Hold **ctrl** and click a dot to hear only that band while the button is down. It is the quickest way to find a ringing note or a boomy spot.
5. Click a band's name, such as 3. bell, to give it another shape.
6. Or hold **alt** and draw the curve you want across the graph: the bands bend to follow your line.
7. Compare with **bypass**, or keep two versions with **A** and **B**.



A new PaperEQ: a clean page. The heart under band 1 is writing like any other; rub it out if you like (section 8).

4. The page



1. **bypass**: switches the EQ off (section 10).
2. **1x to 16x**: oversampling (section 10).
3. **preset**: the preset's name; click for the list, the arrows step (section 11).
4. **blue pen / black pen**: the ink of the curve and the writing.
5. **A / B**: two versions of every setting.
6. **copy** and **reset**.
7. **sidechain**: the dynamic EQ listens to the sidechain input.
8. **output**: the output level.
9. A band's **dot** on the curve. Its colour of ink, its number.
10. The **input** meter and, under it, the input gain knob.
11. The **output** meter.
12. A band's settings: name and shape, frequency, gain or slope, Q.
13. **dyn**, **tube** and **trans** for that band.
14. **tips**: opens the tour.
15. The **analyser**, in pencil behind the curve.

The graph runs from 20 Hz to 20 kHz and from −20 to +20 dB. The thick blue line is the whole EQ. The band you are working on, the one with its name underlined, is also drawn on its own as a thin line, hatched to 0 dB.

The window can be made larger or smaller by dragging its corner, from half to twice its first size; the whole page always fits and its size is saved with the project.

5. Bands and shapes

There are seven bands. They start as a low cut, a low shelf, three bells, a high shelf and a high cut, but any band can take any shape: click its name and choose from the menu. The menu also switches the band on or off.

Shape	What it does	Settings
bell	Boosts or cuts a range around its frequency.	frequency, gain, Q 0.1–18
low shelf, high shelf	Boosts or cuts everything below (or above) its frequency.	frequency, gain, Q 0.25–2.5
low cut, high cut	Removes everything below (or above) its frequency, at 12, 24, 36 or 48 dB per octave.	frequency, slope, Q 0.3–6
brickwall low / high cut	A 96 dB-per-octave cut (a 16th-order Butterworth): flat right up to its frequency, then gone. Choose it from the menu, type brickwall as the slope, or drag the slope past 48.	frequency
notch	Removes a narrow range: a hum, a whistle, a ringing note.	frequency, Q
band pass	Keeps only a range around its frequency.	frequency, Q
tilt	Tilts the whole sound round its frequency: half the gain down at the lows, half up at the highs (or the other way).	frequency, gain

Gains go from −18 to +18 dB. A band that is switched off is drawn as a dashed pencil circle and its name is crossed out; dragging its dot switches it back on.

Changing a band's shape, or a cut's slope, fades the band out and back in over a moment, so it never clicks, even while playing.



Each band's settings, written on the lines under the graph.

6. The dots and the numbers

Do this	And this happens
Drag a dot	Left and right: frequency. Up and down: gain (or, for a cut, nothing but the frequency).
Scroll on a dot	Changes its Q: narrower or wider.
Double-click a dot	Switches the band on or off.
ctrl + click a dot, and hold	Solo: you hear only that band's part of the sound while the button is down. "solo" is written over the dot. A bell, notch, band pass or tilt plays the range round its frequency; a low shelf or low cut plays what lies below it, a high shelf or high cut what lies above.
Click a band's name	Opens the menu of shapes.
Drag a written number up or down	Changes it. The whole range takes about 300 pixels of mouse movement; hold **shift** for fine moves.
Scroll on a number	Changes it a step at a time.
Double-click a number	A box opens on the paper: type the value and press Enter (Escape keeps the old one).
ctrl + double-click a number	Puts it back to its default.

Typing values

Units are optional. A frequency can be typed as `440`, `1k`, `2.5 kHz`; a gain as `-4.5` or `-4,5 dB`; a slope as `24`, `48 dB/oct` or `brickwall`. Values outside a setting's range are brought to its nearest end.

Every change glides into place over about 30 milliseconds, so dragging and automation sound smooth, without zipper noise or clicks.

7. Several bands at once

Choose several dots, and they move together:

- **Drag a box** round them on an empty part of the graph.
- **shift**-click dots to add them to the choice, or take them out.
- **Double-click** an empty part of the graph to choose all the dots that are on.

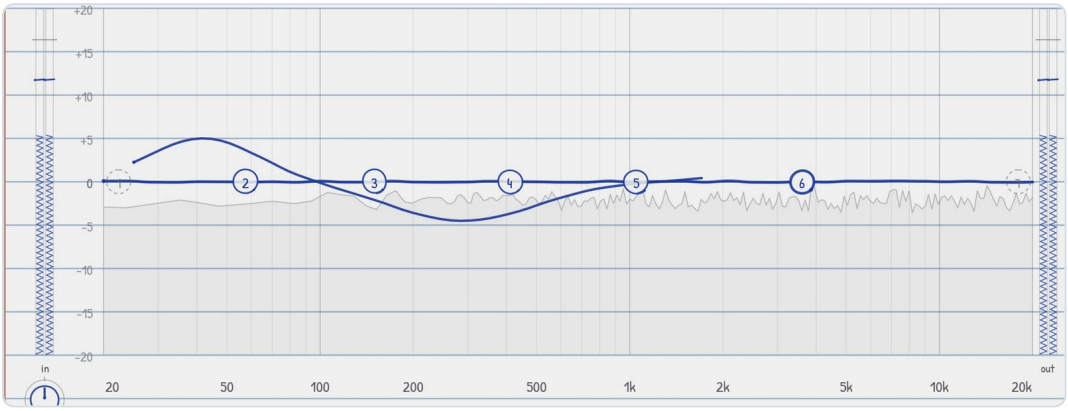
Then drag any one of them: every chosen dot moves the same number of octaves across and the same number of dB up or down. Hold **ctrl** while dragging and their boosts and cuts grow or shrink together instead, by the same factor: a quick way to make a whole curve stronger or gentler. Scrolling on a chosen dot changes the Q of all of them.

Clicking an empty part of the graph without shift clears the choice.

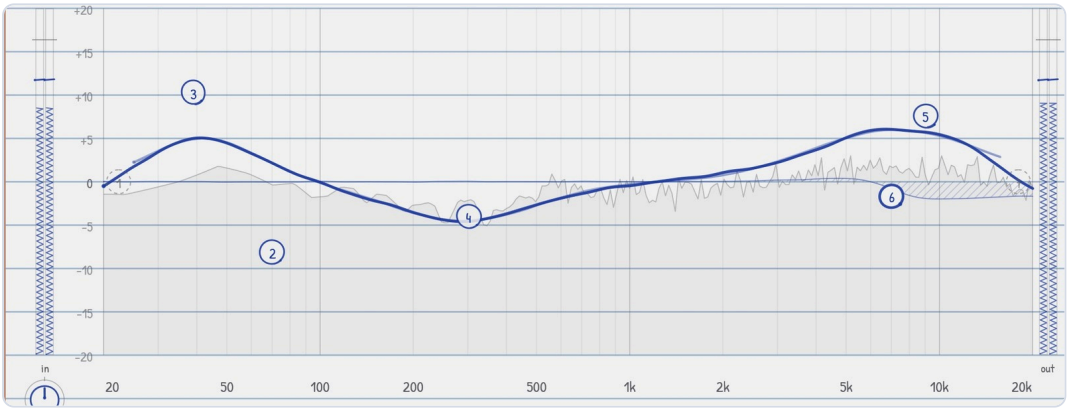
8. The pen and the rubber

Draw the curve

Hold **alt**: the mouse pointer becomes a pen in the colour you chose. Draw across the graph the curve you want. When you let go, the bands that have a gain (bells, shelves and tilt) move so that the whole EQ follows your line as closely as it can. Where you did not draw, the curve stays as it was. Cuts, notches and band passes are not moved. A band that is off is switched on only if it ends up doing something.



Drawing with alt held: the line goes where the pen goes.



On letting go, the bands follow it.

Write on the page

Hold **alt** anywhere outside the graph and the pen turns red: write notes, mark a setting, draw a heart. The writing is saved with the project.

The rubber

Hold the **right mouse button**: the pointer becomes a rubber. Rub over writing and it disappears. Rub over the graph and the curve goes flat where you rubbed: dots you rub over are switched off, and on letting go the other bands move so the curve is flat there and stays as it was elsewhere.

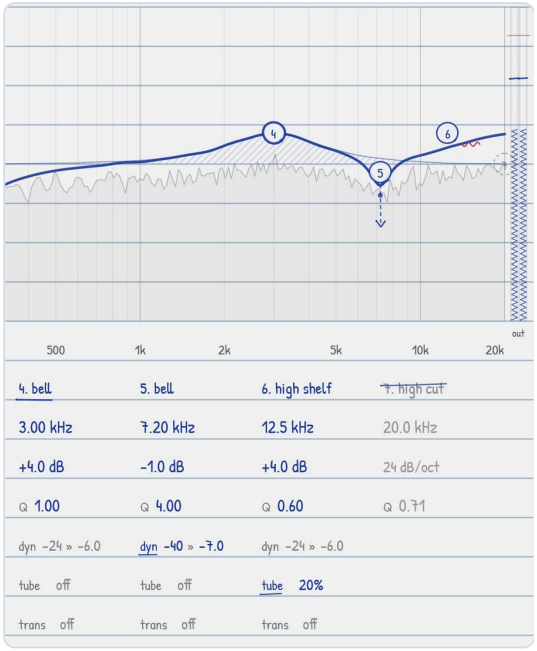
9. dyn, tube, trans and sidechain

Bells and shelves have three more lines under their settings. They are drawn in pencil while off, and in pen, underlined, while on.

dyn: the dynamic EQ

Click the word dyn to switch it on. The two numbers after it are the **threshold** (−60 to 0 dB) and the **range** (−18 to +18 dB). The band listens to its own part of the sound; when that gets louder than the threshold, its gain moves toward gain + range, softly, all the way about 18 dB over the threshold. It reacts in about 5 ms and lets go over about 150 ms.

A negative range tames: a harsh note dips only when it rings out, a boomy bass only on its loud notes. A positive range lifts what is loud. On the graph a dashed arrow from the dot shows the range, and a small dot shows where the gain is right now.



Band 5 dips when its range gets loud (the dashed arrow), band 6 has tube on (the red wave).

sidechain

Click sidechain at the top of the page and every band's dynamic EQ listens to PaperEQ's sidechain input instead of the track itself, in the same range. Route another track to the sidechain in your DAW, switch on **dyn** with a negative range on the bands that should make room, and they dip when the other track plays: a bass under a kick, the mids of a guitar under a voice. With nothing routed to the sidechain, the dynamic EQ hears silence and does not move.

tube

Warm, triode-like saturation of just that band, 0 to 100 %. The band's level is held where it was, so more tube means more harmonics, not a louder band. A small red wave by the dot shows it is on.

trans

Transient shaping of the band, −100 to +100 %: positive makes its attacks harder, negative softer. A small red spike by the dot shows it is on.

10. Along the top



bypass	Switches the EQ off, fading over 10 ms so it never clicks. The word turns red and is ringed. It is also the bypass your DAW uses. While bypassed, the input and output levels are left alone too: the sound passes through unchanged.
1x … 16x	Oversampling: the EQ runs at 2, 4, 8 or 16 times the sample rate. The curve keeps its shape right up to 20 kHz, and the tube's harmonics fold back less. It costs more processing and adds a small delay, which PaperEQ reports to the DAW so it can make up for it (section 13).
A / B	Two versions of every setting; the ringed one is playing. Click the other to switch. B starts as a copy of A. Each keeps its own preset name.
copy A to B	Copies the version playing onto the other one.
reset	Click once and it asks **sure?**; click again within three seconds and every setting of the version playing goes back to the clean page.
sidechain	The dynamic EQ listens to the sidechain input (section 9).
output	The output level, −24 to +24 dB. Drag it, scroll it or double-click and type.
blue pen, black pen	The ink of the curve, the dots and the writing. Saved with the project.

Levels

The meter at the left shows what comes in, the one at the right what goes out, each with its left and right channel, from −60 to +6 dB. Anything over 0 dB is shaded in red, and a short dash marks the peak for a moment. The knob under the input meter sets the input gain, −24 to +24 dB, before the EQ; the input meter shows the level after it.

Bypass, oversampling, input and sidechain belong to PaperEQ itself: presets and A/B leave them as they are.

11. Presets

Click the preset's name at the top of the page for the list; the arrows beside it step to the one before or after. A * after the name means you have changed something since it was loaded.

Drums	Clean Page, Kick Thump, Snare Crack, Floor Tom Boom, Overheads Air, Drum Bus Glue
Bass	Bass Weight, Bass Clarity
Vocals	Vocal Presence, Vocal Air, De-Ess
Instruments	Acoustic Guitar, Guitar Bite, Piano Sparkle, Pad Warmth
Mix and master	Mix Smile, Master Polish
Effects	Telephone, Lo-Fi Radio, Warm Tape Tilt

Presets are starting points: put one on, then move the dots for your sound.

Your own

- **save as a new preset...**: the preset box becomes a box to type in. Type a name and press Enter; Escape or clicking elsewhere cancels. A name that is taken gets a number after it.
- **save over "..."**: when one of your presets is loaded and changed, saves the changes into it.
- **delete "..."**: moves the file to the Recycle Bin, so a slip can be undone. The settings stay as they are.
- **show the presets folder**: opens the folder in Explorer.

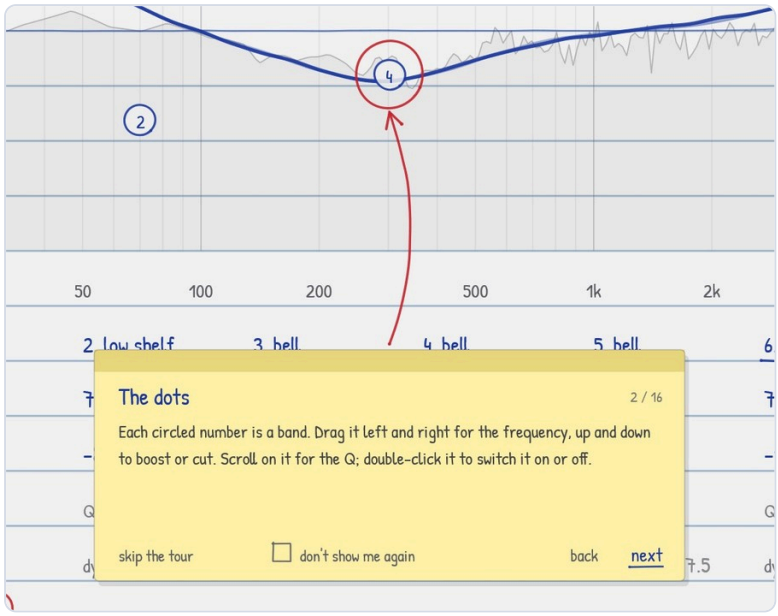
Your presets are files, one per preset, shared by every project and the standalone app. Copy them to share them:

```
Documents\PaperEQ\Presets\<name>.nbpreset
```

A preset holds every setting of every band and the output level. It does not hold the writing on the page, the pen colour, or bypass, oversampling, input and sidechain.

12. The tour

When PaperEQ opens, a yellow sticky note walks you round the page in 16 short tips, each with a red pen arrow to what it explains. Click **next** and **back**, or use the arrow keys, Enter and Space; **skip the tour** or Escape closes it.



It opens by itself once each time you start your DAW, until you tick **don't show me again**. That choice is remembered for the computer, in `%APPDATA%\PaperEQ\PaperEQ.settings`. To see the tour again at any time, click tips at the bottom left of the page.

13. Projects, automation and latency

Everything is saved with your project: every band, both A and B, the preset's name, the writing on the page, the pen colour and the window's size.

Every band's settings can be automated from your DAW: on, frequency, gain, Q, slope, shape, dyn and its threshold and range, tube and trans, and also input, output, bypass, oversampling and sidechain. Changes glide, so automation does not click.

Latency

At **1x** PaperEQ adds no delay at all. With oversampling it adds a few samples, which it reports to your DAW so the track stays in time with the others:

2x	3 samples
4x	4 samples
8x	5 samples
16x	5 samples

The filters work in double precision, so even a brickwall cut low down at 16x stays exact.

The standalone app

PaperEQ.exe runs PaperEQ on its own, on your computer's audio input, with no DAW. It starts with the input muted, so speakers and a microphone do not feed back: choose your audio device and unmute the input under **Options**.

14. If something is wrong

What happens	What to do
PaperEQ is not in the DAW's list.	Check that `PaperEQ.vst3` is directly in `C:\Program Files\Common Files\VST3`, not in a folder inside it, and rescan plug-ins (section 2).
Windows will not run the installer.	It is not signed: choose **More info**, then **Run anyway**. Or use the plug-in alone and copy it by hand.
The DAW still shows the old version after an update.	The DAW had it open during the install. Restart the DAW.
The dynamic EQ does nothing with sidechain on.	Nothing is reaching the sidechain input: route a track to it in your DAW. With sidechain off, dyn listens to the track itself.
The dynamic EQ does nothing.	Its threshold may be above the band's level: lower it. The band must be a bell or a shelf.
alt does not show the pen.	Click once on the page first, so PaperEQ's window is the one in front, then hold alt.
The arrow keys do not move the tour.	The DAW keeps the keyboard for itself: click **next** and **back** instead.
The sound is quieter or louder than bypassed.	That is the EQ's boosts and cuts. Match the levels with **output** before comparing.

15. Support and credits

Help and updates: **georgeergemlidze.com/support**
Write to: **support@georgeergemlidze.com**. Say which version you have, your Windows version, your DAW and its version, and what happened.

PaperEQ is made by George Ergemlidze, with JUCE 8. Its handwriting is the font Patrick Hand by Patrick Wagesreiter, under the SIL Open Font License 1.1. VST is a trademark of Steinberg Media Technologies GmbH. The full licence texts come with the plug-in, in `PaperEQ.vst3\Contents\Resources\Third-Party Notices.txt`.