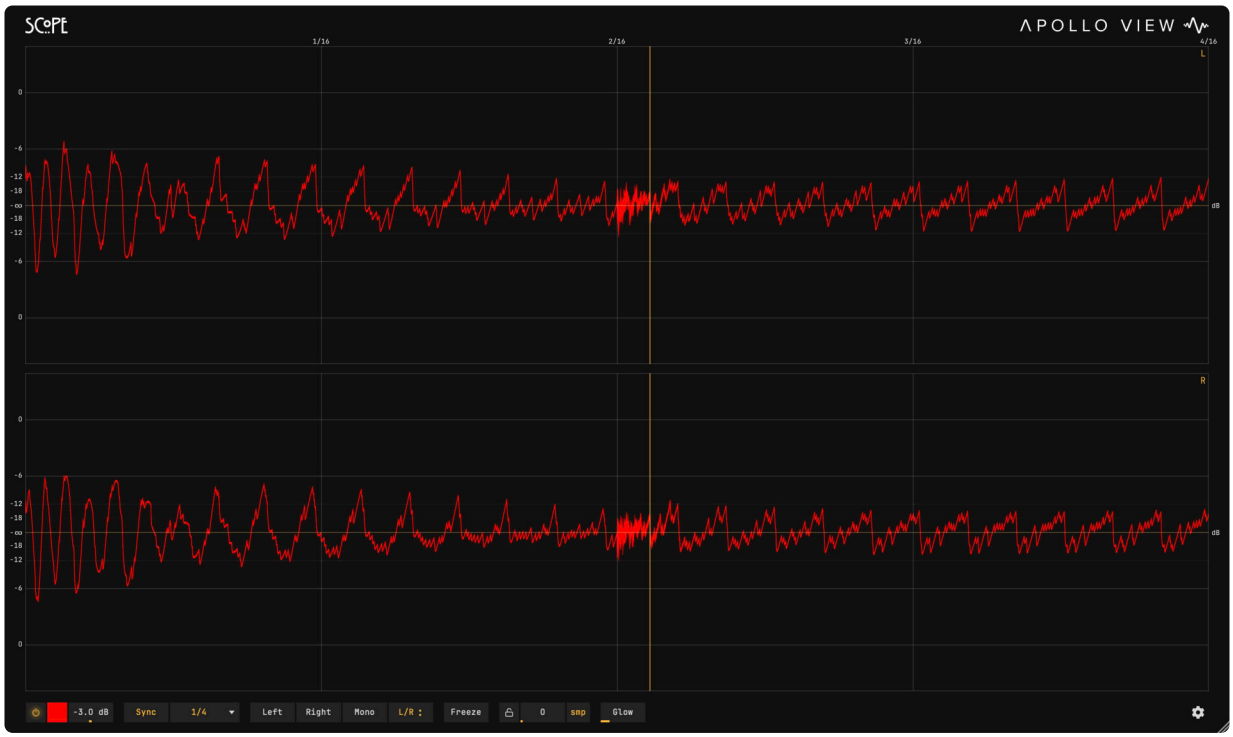
SCOPE

SEE THE SIGNAL



MANUAL V1.4

APOLLO VIEW

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INTRODUCTION

WHAT IS IT?

Real-time oscilloscope for your DAW.

Scope is a free oscilloscope plugin. Insert it anywhere in a signal chain and it draws the waveform as it happens. The display is locked to your project's beat grid, or free-running over a window set in time, from 10 milliseconds to 10 seconds, or set by the frequency or the note of a tone. Your graphics card does the drawing, so the picture stays sharp however large you make the plugin window. The audio passes through unchanged: Scope adds zero latency and never modifies the signal.

WHY IS IT USEFUL?

An oscilloscope shows what a meter can't. A meter tells you a sound's level; a scope shows you its shape at whatever point in your chain you insert it. Your DAW's arrangement view shows a whole recording at once. Scope shows the audio reaching its position in the chain right now, in enough detail to see the individual cycles of a bass note, the click at the start of a kick, or a limiter flattening the peaks.

A level meter can't show a kick that's really two hits, a fast-attack compressor turning down the start of every hit, or a sub that has changed from a sine to a flattened square. The wave shows all of them, and clipping too: flat tops on the wave, often the sign of a gain stage set too high. With the display locked to the beat grid, it also shows whether a hit is on its beat line or a few milliseconds after it. Things you can hear but can't quite identify become things you can see on the display.

Scope is made by Apollo View Modular. We build Eurorack modules and audio plugins, and we like a tool that does one job and looks good doing it.

FEATURES

- Real-time waveform display, drawn by your graphics card, sharp at any size
- Beat-synced timebase with 22 divisions from 1/128 to 16 bars
- Free-run timebase from 10 ms to 10 s in time units, or set as a frequency in Hz or as a note
- Left, Right, Mono and L/R channel modes, with L/R in two lanes or one
- Clip indicators: the top or bottom edge of the display lights red where the wave goes above 0 dBFS, and the clipped part of the wave is highlighted
- Rolling mode for a continuously scrolling view
- Freeze: hold the picture while audio keeps playing, with the last 8 seconds kept so you can change the timebase and zoom on it
- Zoom to 64x and pan
- Display offset in samples or milliseconds, for plugins before Scope that add delay
- Any waveform colour you like, and an adjustable phosphor-style glow
- High-resolution image export of the display, and settings export/import for moving between machines
- Resizable up to 4096 x 2160 pixels
- Zero added latency, zero signal modification

- VST3, AU, CLAP and AAX for macOS 10.15 or later and Windows 10 or later (AU is macOS-only), with a free licence key

SYSTEM REQUIREMENTS

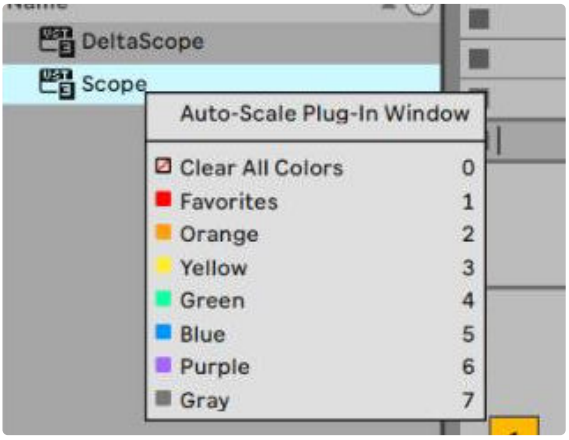
Requirement	Minimum
OS	macOS 10.15 (Catalina) or later, or Windows 10 or later
Mac	Any Intel or Apple silicon Mac that runs macOS 10.15
PC	Any 64-bit PC that runs Windows 10
GPU	Any GPU with OpenGL 3.2 support
Formats	VST3, AU, CLAP, AAX (AU is macOS-only)

ABLETON LIVE ON WINDOWS

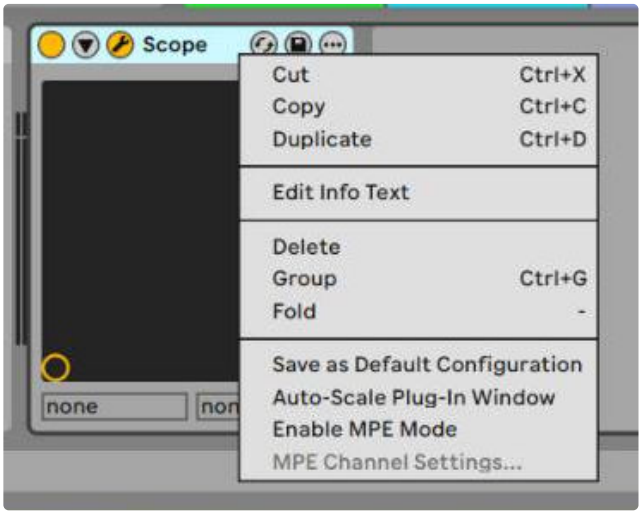
On Windows, Live enlarges every plugin window by your desktop's scale factor. That's Live's `Auto-Scale Plug-In Window` setting, and Live ships with it ticked (on) for every plugin. Scope draws at the screen's real resolution, so Live's enlargement only blurs it: for Scope you want this setting unticked (off).

1. For every instance you add from then on: right-click the plugin in Live's browser and click `Auto-Scale Plug-In Window` so it's unticked.
2. For an instance already in your set: right-click the device's title bar and untick the same entry there.
3. If you're unsure, open the menu again: no tick beside the entry means Live is leaving the window alone.

The setting is per plugin, so unticking it for Scope changes nothing for your other plugins. Live also ticks it again whenever the plugin is updated, so expect to repeat this after installing a new version. If the display goes soft again, with a thin light line along the top of the scope, the setting is back on.



In Live's browser: right-click Scope, untick `Auto-Scale Plug-In Window`.



Or on an instance already in the set: right-click the device title bar.

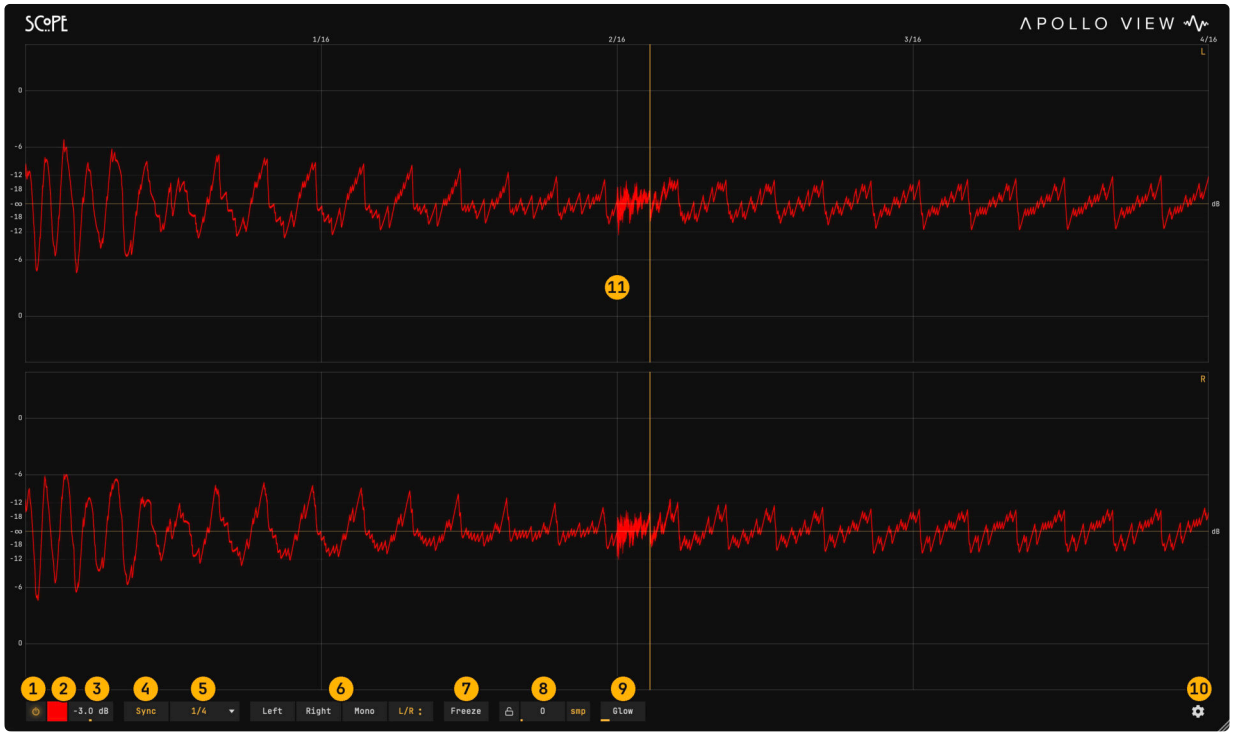
QUICK START

1. Run the installer, then open (or restart) your DAW. Scope is an audio effect. DAWs that group plugins by maker list it under Apollo View, and a search for “Scope” in the plugin browser finds it too. If it doesn’t appear, rescan plugins in your DAW’s plugin manager.
2. Insert Scope on any track: last in the chain to see what leaves the track, or immediately after a plugin to see what that plugin is doing. The first time it opens you’ll see the activation screen: enter your email and your licence key, then click `Activate`. Until you do, the display stays behind that screen, though the audio passes through unchanged. Keys are free from shop.apolloviewmodular.com/plugins/scope.
3. Press play. The waveform draws from left to right across one quarter note (`Sync` mode at the default 1/4 division), and a part that repeats every quarter note stands still on the grid.
4. Drag the gain slider (it reads `-3.0 dB` when you first open Scope) until the waveform fills the display without touching the edges. It only changes the picture, never the audio. Alt-click (Option-click) it to reset to −3 dB.

That’s enough to start.

> **TIP:** Scope keeps drawing while the transport is stopped, so live input (a synth you’re playing, an incoming mic) appears whenever your DAW is sending it to the track. With the transport stopped there’s no beat to lock to, so in Sync mode a repeating part only stands still once you press play.

OVERVIEW



Scope with the key numbers: Sync at the 1/4 division, L/R, display gain at −3.0 dB.

KEY

1. Power. Toggles the waveform display on and off.
2. Colour swatch. Click to open the colour picker: a colour, or by frequency.
3. Gain slider. Reads the current display gain (`-3.0 dB` on a fresh instance) and scales the display from −36 to +36 dB.
4. Timebase mode. Toggles between Sync and Free-run.
5. Division picker (Sync) or timebase slider (Free-run).
6. Channel modes: Left, Right, Mono, L/R.
7. `Freeze`. Holds the display while audio keeps playing.
8. Offset: padlock, offset slider, `smp` / `ms` units.
9. `Glow` slider. Phosphor-style glow amount.
10. Settings cog. Opens Settings over the display.
11. The display: waveform, grid, dB and time labels, write cursor.

The title bar has the Scope wordmark on the left and the Apollo View logo on the right. With tooltips on, hover any control and its description appears in the title bar, between the wordmark and the logo. Below 978 pixels wide that strip is too narrow, and it shows no tooltips.

SLIDERS

Every slider in Scope responds to the same gestures; only Glow shows no number (see Glow).

Gesture	Does
Drag	Moves the slider.
Click	Type an exact value: Enter applies it (a value outside the slider's range is changed to the nearest limit) and Esc cancels.
Alt-click (Option)	Resets the slider to its default.
Scroll	Changes the slider in small steps: turn the wheel slowly and the value moves one step at a time; turn it fast and the value moves several steps at a time.

The timebase slider accepts units, so "250 ms", "1.5 s" or, in frequency units, "2k" are all set exactly as typed; the other sliders take a plain number in the units they show, and the offset slider also takes a sum such as 256+128. On a Mac, Alt means Option and Cmd means Command; on Windows the same gestures use the Alt and Ctrl keys.

RESIZING

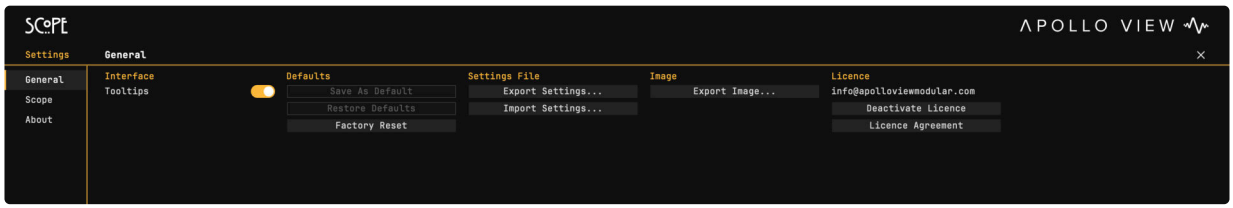
Drag any edge or corner. The window goes from 818 x 240 pixels up to 4096 x 2160, enough to fill a 4K screen; on a bigger screen it stops at that size. Each instance remembers its own size, and `Save As Default` in Settings makes your preferred size the starting point for new instances. A new window still opens at 978 pixels wide. Below 978 the channel buttons fold into one menu (see Channel modes) and the title bar shows no tooltips. At 978 and wider you see no difference.

WHAT SCOPE REMEMBERS

Scope saves its settings with the DAW project, so an instance opens as you left it. A few things deliberately reset on reopen. The full list is in the Settings chapter, under What Scope remembers.

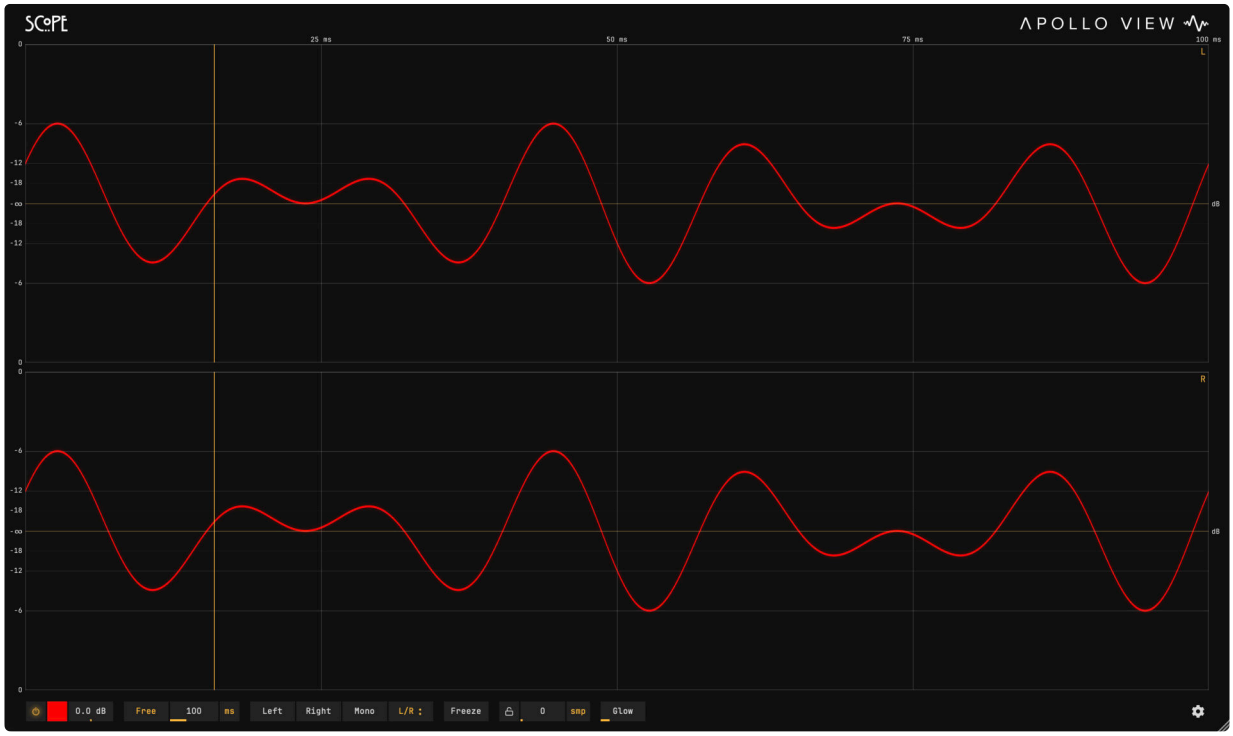
SETTINGS AT A GLANCE

The cog at the bottom right opens Settings over the display. The pages are listed down the left (`General`, `Scope` and `About`), and clicking a name opens that page. Every change applies as you make it. Close it with the × at the top right, or with Escape.



Settings, open on the General page: the pages listed down the left, the × at the top right closes it.

THE DISPLAY



Free-run at 100 ms: two sine tones, 50 Hz and 70 Hz, played together. They go in and out of phase 20 times a second, and that 20 Hz rise and fall in level shows in the outline of the wave. It's the same beating you hear when two notes are slightly out of tune, but too fast to count by ear.

Scope draws the incoming waveform against a dB-calibrated grid:

- **Lanes**: in `L/R` mode the display splits into two lanes, L above R, each with its own labels, or the two share one lane (see Channel modes). A gold letter in the top-right corner of each lane shows which channel that lane is drawing: L and R in two lanes, both letters when the two share one, or L, R or M when one channel has the whole display. It's the quickest way to tell which channel mode is on.
- **dB labels**: down the left, the level in dB at each grid line of each lane. The centre line is silence, which in dB is minus infinity. The wave swings above and below it, and the labels tell you the level each swing reaches.
- **Time labels**: along the top, the beat grid in Sync mode or the time window in Free-run. With the Free-run slider in frequency or note units (see Timebase, the next chapter) they read in Hz instead. Each grid line is labelled with a frequency. A tone at that frequency would complete one cycle between the left edge and that line.
- **Write cursor**: the thin vertical line is where the newest audio is being drawn right now. Everything to the right of it is still the previous sweep (the last pass across the display), and is replaced by new audio as the cursor reaches it. `Cursor` in Settings turns it off if you'd rather have a cleaner display.

The grid is a measuring instrument. Turn the gain up and the waveform grows, and the grid grows with it: each line keeps its dB label and rides outward with the level it marks, while new lines appear at the centre. A label always reads the real level of the audio beneath it, not the

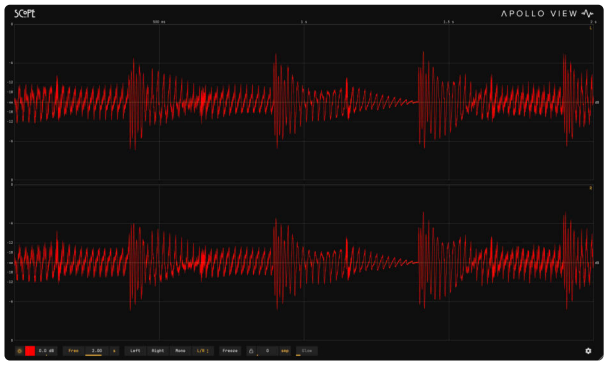
level in the magnified picture: a peak that touches the line labelled −6 really is at −6 dBFS, whatever the gain slider says. You never have to add the gain to the label yourself.

ROLLING MODE

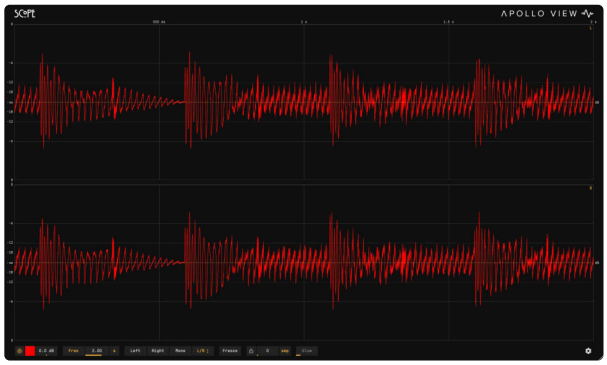
By default Scope works like a classic oscilloscope: the trace draws from left to right, and when it reaches the right edge it starts again at the left, replacing the old picture as it goes. That suits anything that repeats: in Sync mode the same beat is drawn in the same place on every pass.

Rolling mode shows the same window a different way. The display still covers your chosen division or time window, but the audio scrolls across it continuously instead of each sweep redrawing in place. It moves the way a waveform scrolls in DJ software. The newest audio enters at the right edge and everything slides left, so a slow change appears as one continuous line rather than a sweep that keeps restarting. To use it, turn on `Rolling` in Settings.

Rolling mode has no write cursor, because the newest audio is always at the right edge, so the `Cursor` toggle is greyed out. Zoom and pan are unavailable. And the `Glow` slider is greyed out too (see Glow for why).



Rolling mode: the newest audio enters at the right edge…



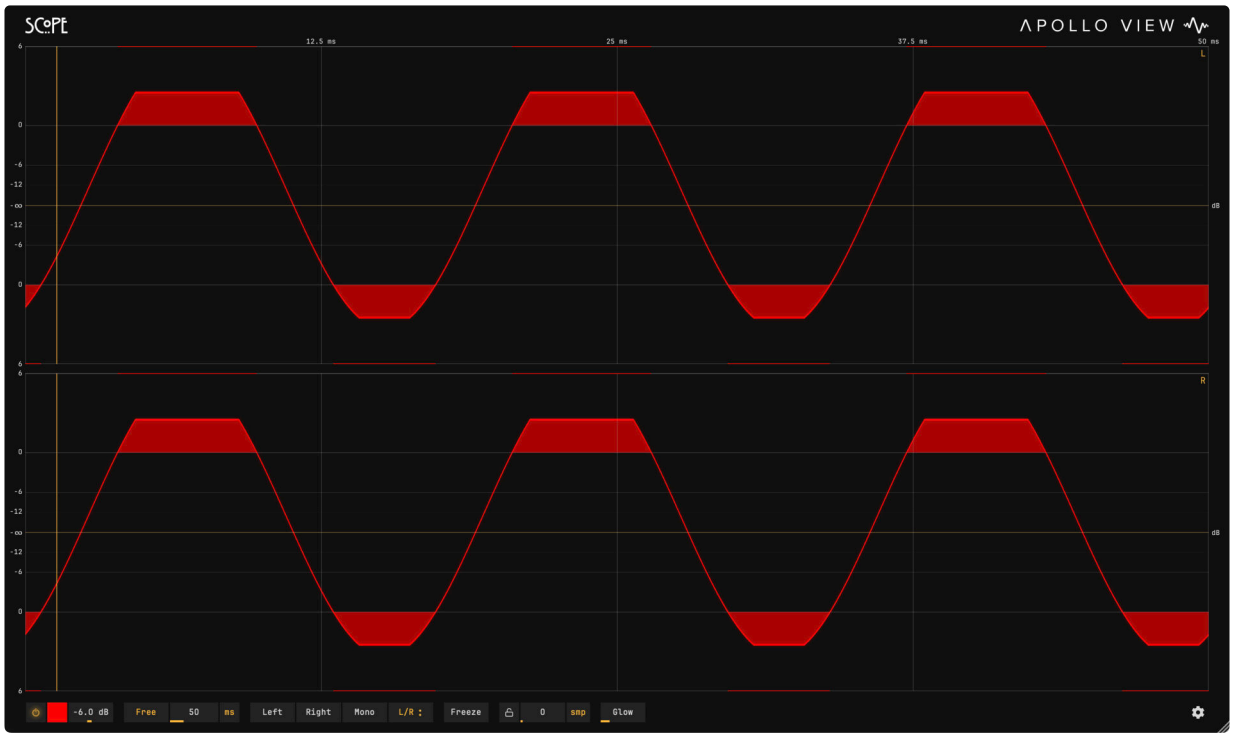
…and a moment later everything has slid to the left.

CLIP INDICATORS

Scope watches for audio above 0 dBFS, the highest level a 16- or 24-bit audio file or an audio interface can carry. Inside a DAW the signal can go above 0 dBFS without distorting, because most DAW mixers work in floating point and have plenty of headroom above 0 dBFS. So the signal leaving a plugin driven too loud can be above 0 dBFS long before you hear any distortion. As soon as that signal reaches your audio interface or a 16- or 24-bit bounce, everything above 0 dBFS becomes distortion. Scope shows you when the signal goes above 0 dBFS, and where:

- **Clip border**: the edge of the display lights red directly above or below each part of the wave that's above 0 dBFS. The top edge lights where the top of the wave is clipped, and the bottom edge where the bottom of the wave is clipped, so you can see immediately when only one half of the wave is clipping.
- **Clip overlay**: the part of the waveform that's above 0 dBFS is highlighted, so you can see where in the wave the clipping is.

Both have toggles in Settings (`Clip Border` , `Clip Overlay`).

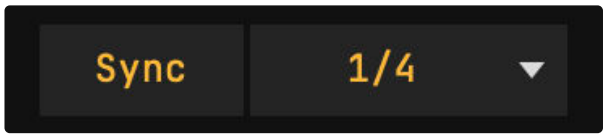


A loud signal driven above 0 dBFS on both halves of the wave. The top and bottom edges both light along the clipped parts, and the flattened tops and bottoms carry the clip overlay. Display gain at −6 dB keeps the waveform inside the border.

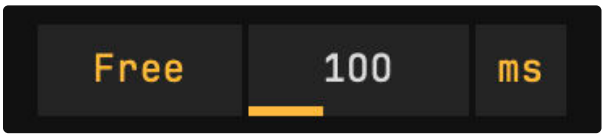
TIMEBASE

The timebase sets how much time fits across the display, and that choice sets what you can see. A window of a few milliseconds shows the shape of individual cycles of a note. A window of a beat or a bar shows the rhythm and the dynamics of a part.

The mode button shows the current mode, `Sync` or `Free`. Click it to switch to the other. Pick `Sync` to check timing: whether a hit is on its beat line or slightly after it, whether a delay's repeats fall on the grid, whether a ducked bass has recovered before the next kick. Pick `Free` to see the shape of the wave itself, whatever the tempo: a synth tone, a sub-bass, a click, a noise burst.



Sync: the beat-division picker.



Free: the timebase slider and its units button.

SYNC

`Sync` locks the display to your DAW's tempo and transport. The beat-division picker sets the window:

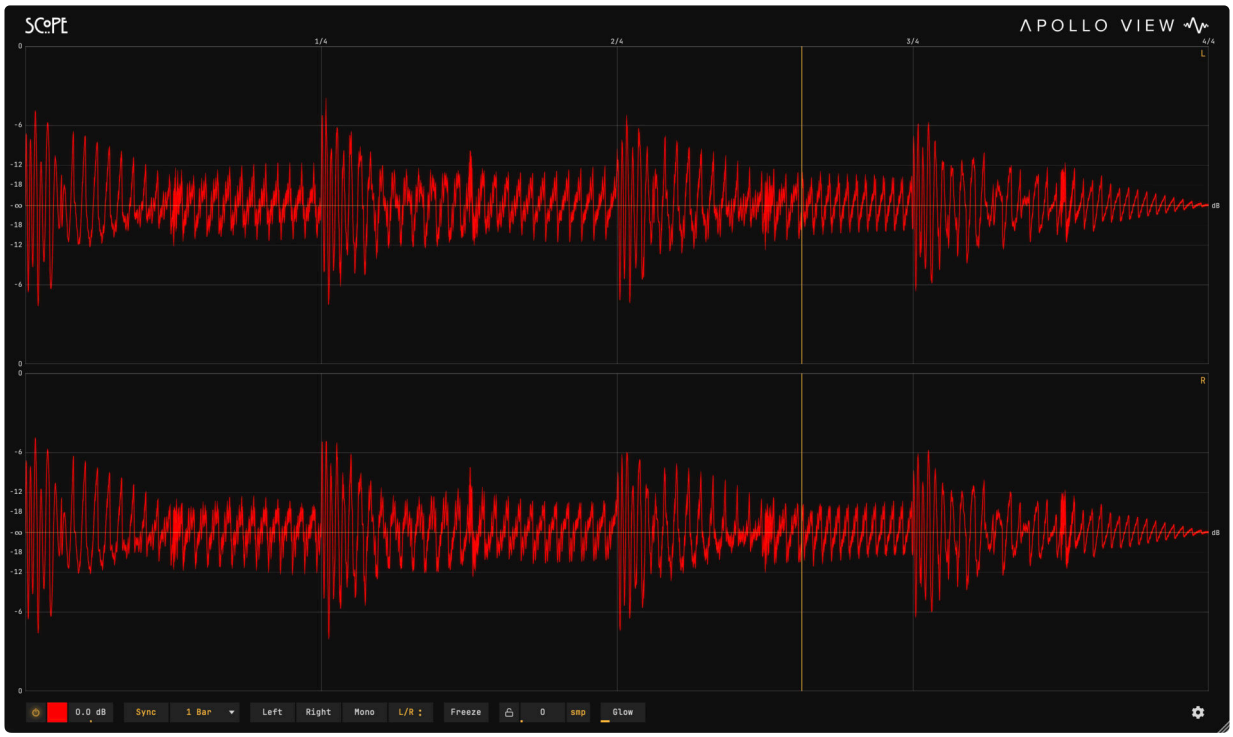
Group	Divisions
Straight	1/128, 1/64, 1/32, 1/16, 1/8, 1/4 (default), 1/2, 1 Bar
Triplets	1/16T, 1/8T, 1/4T, 1/2T
Dotted	1/16d, 1/8d, 1/4d
Multi-bar	2 Bars, 3 Bars, 4 Bars, 6 Bars, 8 Bars, 12 Bars, 16 Bars

In Sync mode the grid lines are subdivisions of the beat grid, labelled along the top, and every sweep starts on the beat grid. That's why a kick on every quarter note stands still on a 1/4 display: the sweep restarts as the kick repeats, so the hit is drawn in the same place every time. Anything that moves across the display from one sweep to the next isn't repeating in time with the window: a free-running LFO, an unsynced delay, a loop at the wrong BPM.

Choose the division to suit what you want to see:

Division	Shows
A short one (1/16 or 1/32)	A single hit, large enough to see its shape.
One or two bars	The rhythm: where a delay's repeats fall within the bar, and how long a ducked bass takes to recover after each kick.
The multi-bar divisions	A whole phrase, so you can watch a build or a drop as one shape.

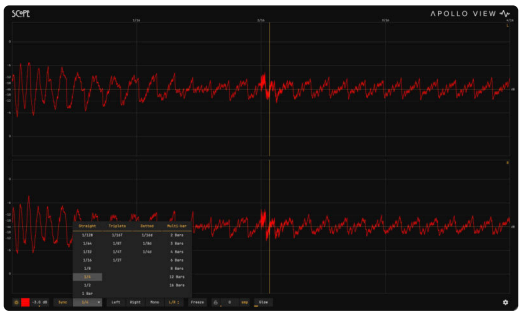
> **NOTE:** A bar division is always four quarter notes long, whatever your project's time signature. So in 3/4 the 1 Bar window is a quarter note longer than your bar, and the sweep won't always start on your downbeat.



One bar at the 1 Bar division: four kicks, one on each beat line, and they stay there sweep after sweep. That's what Sync is for.

Scope can hold up to the last 64 seconds of audio at every sample rate up to 192 kHz, which is 16 bars at 60 BPM. At a slower tempo a window longer than that shows its most recent 64 seconds, and the title bar says so while you aren't pointing at a control: "Window limited to 64 s at this tempo (about 13 bars)." Above 192 kHz the bar lengths that can't fit are greyed out in the picker.

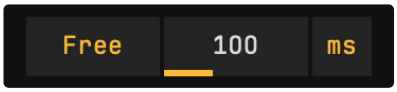
Scope doesn't keep all 64 seconds at all times, though: to save memory, each instance holds on to what its window needs, and never less than about 20 seconds. So when you switch to a window longer than that, the display fills forward from what it kept instead of showing the past at once.



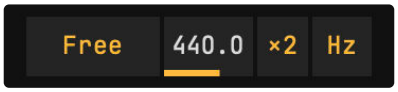
The beat-division picker, open.

FREE-RUN

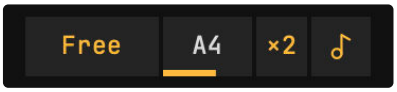
`Free` unlocks the display from the tempo. In time units the timebase slider sets the visible window from 10 ms to 10 s; in frequency and note units it is set by the tone instead, and can be far shorter.



Free in time units: the window length and the units button.



Free in frequency units: the frequency, the cycle button and the units button.



Free in note units: the note, the cycle button and the units button, now showing the note glyph.

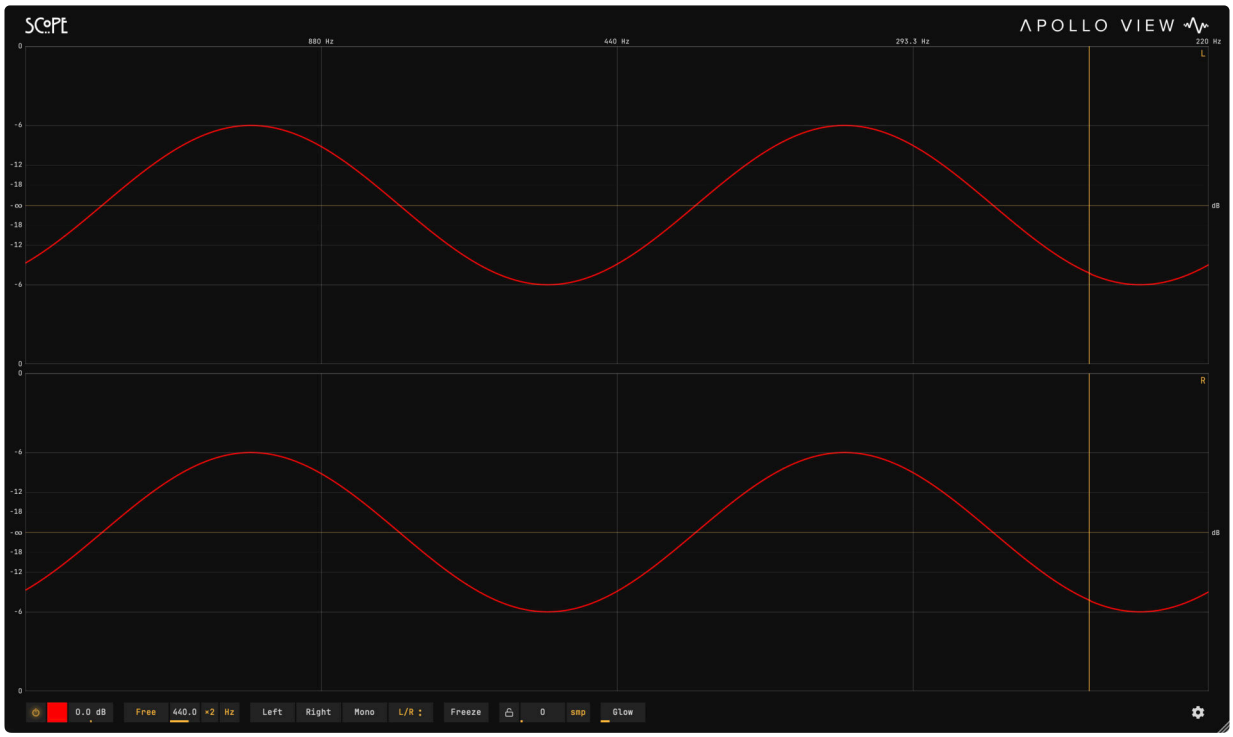
The gold button at the end of the slider is the units button: click it and the units step from time to frequency to note, and back to time. It always shows the unit you're in: `ms` or `s`, `Hz` or `kHz`, or a note glyph. It stays gold in every mode because it's a button, not a label.

Frequency units are useful when you're looking at a tone whose frequency you know: enter its frequency and Scope sets the window to hold a whole number of cycles of that tone. (One cycle is one complete repeat of the wave's shape: a 440 Hz tone repeats 440 times a second, so one cycle lasts about 2.3 ms.) In frequency and note units a cycle button appears between the value and the units button (it reads `×2` by default); it sets how many cycles span the display.

In frequency units the slider runs up to 10 kHz. Its lowest value depends on the cycle count, because the whole window can never be longer than 10 seconds: 0.1 Hz at ×1, 0.2 Hz at ×2 and 0.4 Hz at ×4. Alt-click resets to 500 ms in time units or 500 Hz in frequency units. From 1000 up (1000 ms or 1000 Hz) the readout switches unit: "1.50" means 1.5 s, or 1.5 kHz.

In note units the slider picks a note rather than a frequency: C0 to C8, a semitone at a time, and the window holds the chosen number of cycles of that note's pitch, with A4 at 440 Hz. It's the same framing as frequency units without the arithmetic: a bass line in E needs E1, not 41.2 Hz. Click the slider and type a note name, "C#2" or "Db2", or type a frequency and the nearest note is chosen. Alt-click resets to A4. The labels along the top stay in Hz.

> **PRO TIP:** Show two cycles rather than one. A free-running sweep starts at whatever point of the wave the audio has reached. With one cycle on the display, the start of the shape is rarely at the left edge, so its recognisable features are split between the two edges. With two cycles there's always one complete cycle somewhere on the display, and the repeat lets you confirm how long a cycle takes. That's why the cycle button defaults to `×2`. Click it to step through ×1, ×2 and ×4; Alt-click resets.



Frequency units at the ×2 default: the frequency set to 440 Hz, so two cycles fill the display. The top labels read in Hz too: each grid line is labelled with the frequency of a tone that would complete one cycle between the left edge and that line, so 440 Hz is at the halfway line and 220 Hz at the right edge.

Typing a value

Click the slider to type. In time units a bare number is milliseconds, and adding “s” makes it seconds. Since a time window can’t be shorter than 10 ms, a bare number below 10 is read as seconds, so retyping the displayed “1.5” gives 1.5 s. In frequency units a bare number is hertz, and “1.5k” is kilohertz. In note units, type a note name or a frequency.

Why a steady tone drifts

Even with the right frequency set, a steady tone usually drifts slowly across the display. Scope has no trigger: it just keeps sweeping, and the picture only stands still when one sweep holds an exact whole number of cycles. A real tone is rarely exactly the frequency you typed. And even a perfect tone can’t quite fit: a sweep is a whole number of samples, and a cycle of the tone almost never is. The small mismatch accumulates sweep after sweep, and each new pass starts a little further along the wave than the last. This is normal for any sweep without a trigger; it isn’t a fault.

A hardware oscilloscope stops this drift with a trigger. The trigger waits for the wave to cross a chosen level before starting each pass, so every pass begins at the same point of the wave. DeltaScope’s MIDI note-locked timebase does the same job for a played note.

POWER, GAIN AND COLOUR

POWER

The ⏻ button, far left, turns the waveform display on and off. Audio always passes through unaffected; power only controls the drawing. Use it to turn off the display of a Scope you keep in the chain but don't need to watch. Power is never saved with the project, so a reopened project always starts with the display on.



Power, colour swatch and the gain slider.

GAIN

The gain slider scales the displayed amplitude from −36 dB to +36 dB in 0.1 dB steps, so a quiet signal can fill the lane and a loud one can be reduced to fit inside the border. A new instance starts at −3 dB on purpose. Many instrument plugins output a signal close to full scale. At −3 dB, 0 dBFS is just inside the border, so a signal that goes a little above 0 dBFS is still drawn inside the display. The grid labels change with the slider, so what you read is still the true level. Click to type an exact value, Alt-click to reset to −3 dB. The value is shown on the slider itself.

> **PRO TIP:** Look for overs before you touch the gain. At the −3 dB starting point the border sits about 3 dB above 0 dBFS, so peaks a little over 0 dBFS still draw as a shape, between the 0 dB line and the border, and the border lights red where it happens (see Clip indicators). Once the level is under control, raise the gain until the waveform fills the lane.

COLOUR

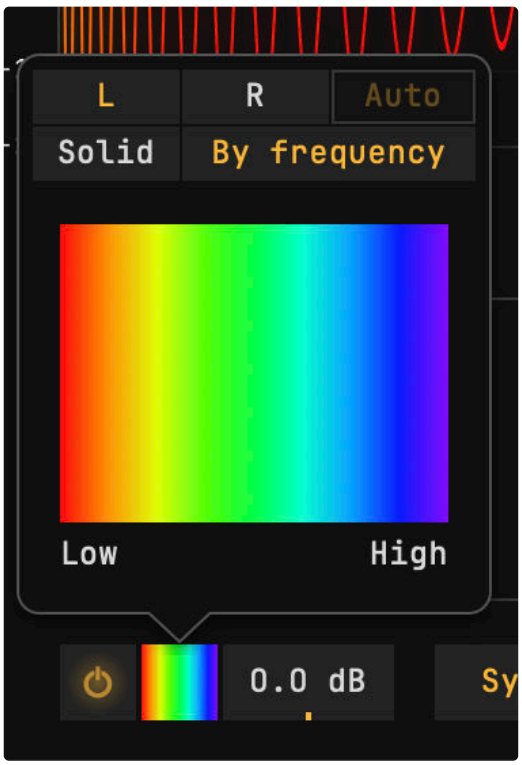
Click the swatch next to the power button and pick any colour for the waveform. The default colour is red. The picker has two tabs: `L` sets the waveform's colour, and a colour picked on `R` goes to the right channel only; the swatch then shows it as its right half.

`Auto` links the right channel back to the left. While it is lit the right channel follows the left in its colour and in whether it is solid or by frequency. Pick a colour on `R` and the right channel takes it. Choose the one of `Solid` and `By frequency` that is not lit there and the right channel starts from the lighter shade `Auto` was drawing for it where the two channels share a plot. Either way `Auto` turns off. Clicking the word that is already lit does nothing and leaves `Auto` on. Click `Auto` to link them again.

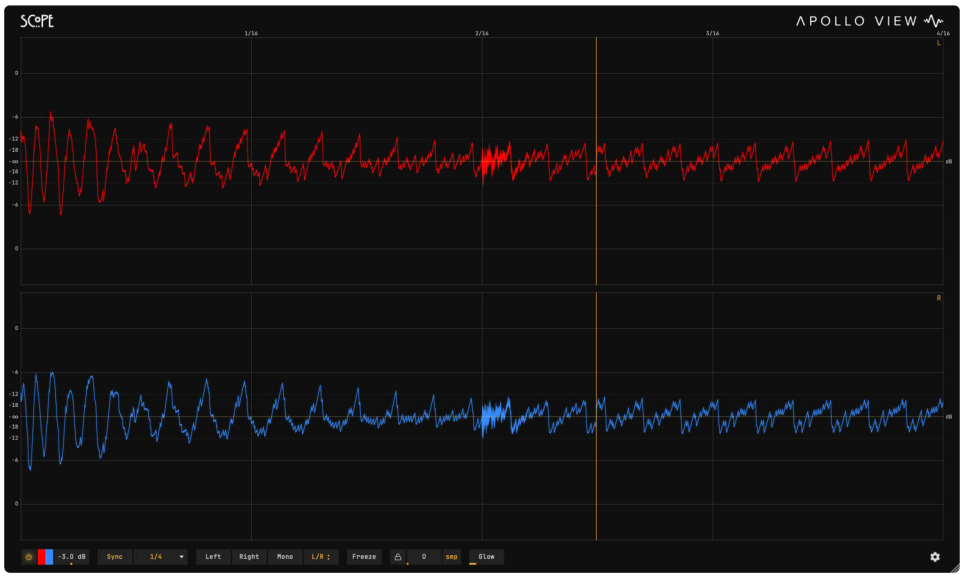
Under the `L`, `R` and `Auto` buttons is a second row with two choices, `Solid` and `By frequency`. The one that is on is gold. The choice is for the channel whose tab is selected, so the left channel can be tinted by frequency while the right keeps a plain colour, or the other way round. On `Solid` the picker shows the colour square and the hue strip. On `By frequency` it shows the frequency ramp in their place, with `Low` and `High` under it; the colour you had picked is kept and comes back when you choose `Solid`.



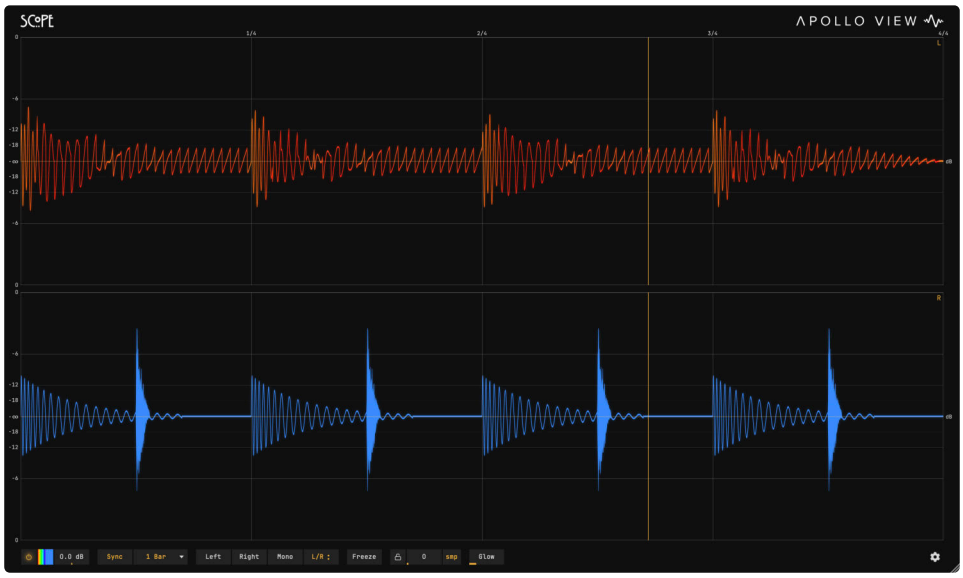
The colour picker: the `L` and `R` tabs and `Auto` side by side, with `Solid` and `By frequency` under them, above the colour field.



The picker on `By frequency`: the ramp, with `Low` and `High` under it, replaces the colour square and hue strip.



A blue picked on the `R` tab: the right channel wears it, and the swatch shows it as its right half.

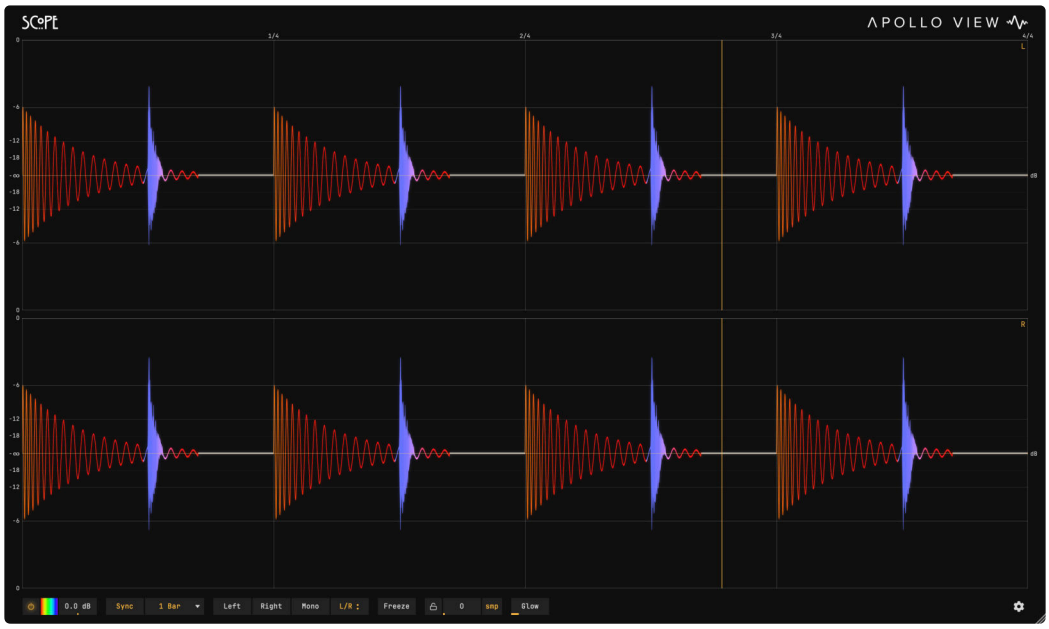


Left by frequency and right a plain blue, set in the picker: the swatch is half ramp, half blue.

COLOUR BY FREQUENCY

Colour by Frequency tints the waveform by what it contains instead of one flat colour. Everything up to 80 Hz is red; above that, every frequency has its own colour: orange and yellow through the upper bass, green through the mids, blue to violet at 20 kHz. Where several frequency ranges sound at once their colours mix, so a kick reads orange at the hit, a hi-hat violet, and dense full-band material goes pale. It tells you where in the spectrum each part of the waveform lives.

The colour sits on the sound that made it: a kick is orange from its first instant, and a hi-hat over a bass note shows violet and red where each sounds. The newest 22 ms of a running trace, the edge beside the cursor or the newest edge when rolling, is drawn from what has arrived so far and settles over a frame or two, so a hit's first moments can change colour briefly just after they are drawn.



A kick under hats with Colour by Frequency on: orange at each hit, violet in the hats.

Where it is set

Where	Sets
The colour picker, `By frequency` on a channel's tab (see Colour)	That channel.
The `Colour by Frequency` switch in Settings	Both channels.

Only the picker can make the two channels differ. The swatch always opens the picker.

What the switch and the swatch show

You see	It means
The switch's knob in the middle, with the note `L only` or `R only`	Only the channel in the note is by frequency. Click the switch then and both channels turn on.
The swatch shows the ramp	Both channels are by frequency.
Half the swatch is the ramp, the other half a colour	Only one channel is by frequency; the other half is the other channel's colour.

A project from 1.3 keeps its setting: a switch that was on is on for both channels. Since 1.4.0 each colour sits on the sound that made it, so a kick that used to wear the colour of its click now shows its low colour from its first millisecond.

> **NOTE:** Nothing in Scope changes your audio. Gain, power, colour and timebase only change what you see.

CHANNEL MODES

Four buttons choose what's drawn.



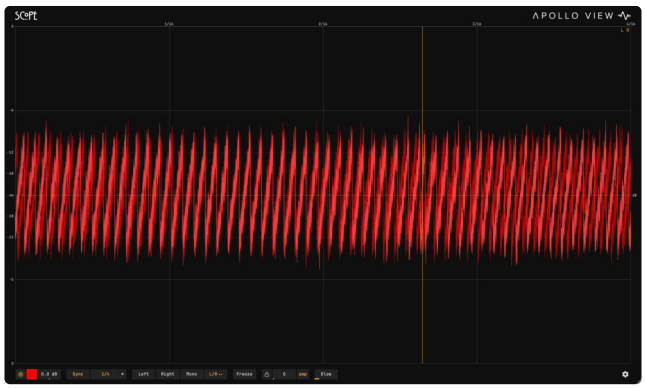
The channel modes, L/R selected. The two dots on the button, one above the other, mean two lanes.

Mode	Shows
`Left`	Left channel only.
`Right`	Right channel only.
`Mono`	The mono average, (L + R) / 2.
`L/R`	Both channels, in two stacked lanes (L above R) or in one. Default.

`L/R` shows both sides, in two lanes or in one lane. Click `L/R` again while it's the active mode to switch between the two; the button shows its choice as two dots.

- **Two lanes**: one above the other (the dots sit one above the other). Two lanes keep each side's shape clear when the signal is dense.
- **One lane**: Right drawn in front of Left (the dots sit side by side). The pair wears a darker and a lighter shade of your colour, or the colours you picked on the `L` and `R` tabs, and a difference in level or timing between the sides is read straight off the shared grid.

Either way you see what a stereo effect does differently to left and right. `Left` or `Right` gives one side the whole display.



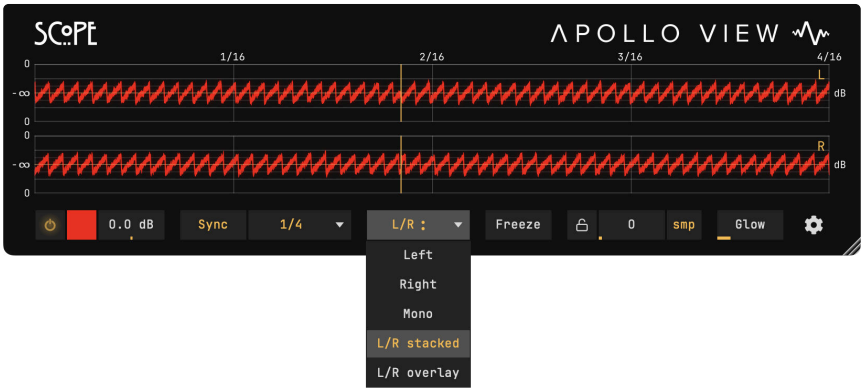
L/R in one lane: Right, in the lighter shade, drawn in front of Left on one grid.

`Mono` shows the mono average: both sides added together and halved. That's close to what a single speaker (a phone, a club sub, a mono radio) receives. Anything whose polarity is inverted on one side cancels out. Anything with a timing difference between the two sides (a Haas delay, a wide chorus) loses level at some frequencies and sounds thinner.

A bass that shrinks or vanishes when you switch to Mono will do the same on that speaker. That's worth knowing before the track is played in a club.

On a mono track there's only one channel to draw, so `Left`, `Right` and `Mono` all show the same signal and `L/R` shows it twice. Whether a track is truly mono depends on your DAW: some DAWs run every plugin in stereo, even on a mono track.

Below 978 pixels wide the four buttons fold into one dropdown. Its menu lists `Left`, `Right`, `Mono`, `L/R` stacked and `L/R` overlay, and the dropdown shows the current view with the mark of its layout. At 978 and wider the buttons come back, with the view you picked lit.



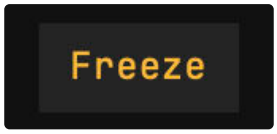
The folded view dropdown, open at the least window size, 818 x 240: its five items, with `L/R` stacked marked as the current view.

FREEZE

Sometimes something has just happened that you want to look at closely: a click at an edit point, a kick that triggered twice, a peak that lit the clip border. Press `Freeze` and the picture on the display holds while the track keeps playing, so you can zoom into it and pan around it without stopping the transport or the recording. (Rolling mode has no zoom, so in Rolling mode Freeze only holds the picture.) Press `Freeze` again and the live waveform is back.

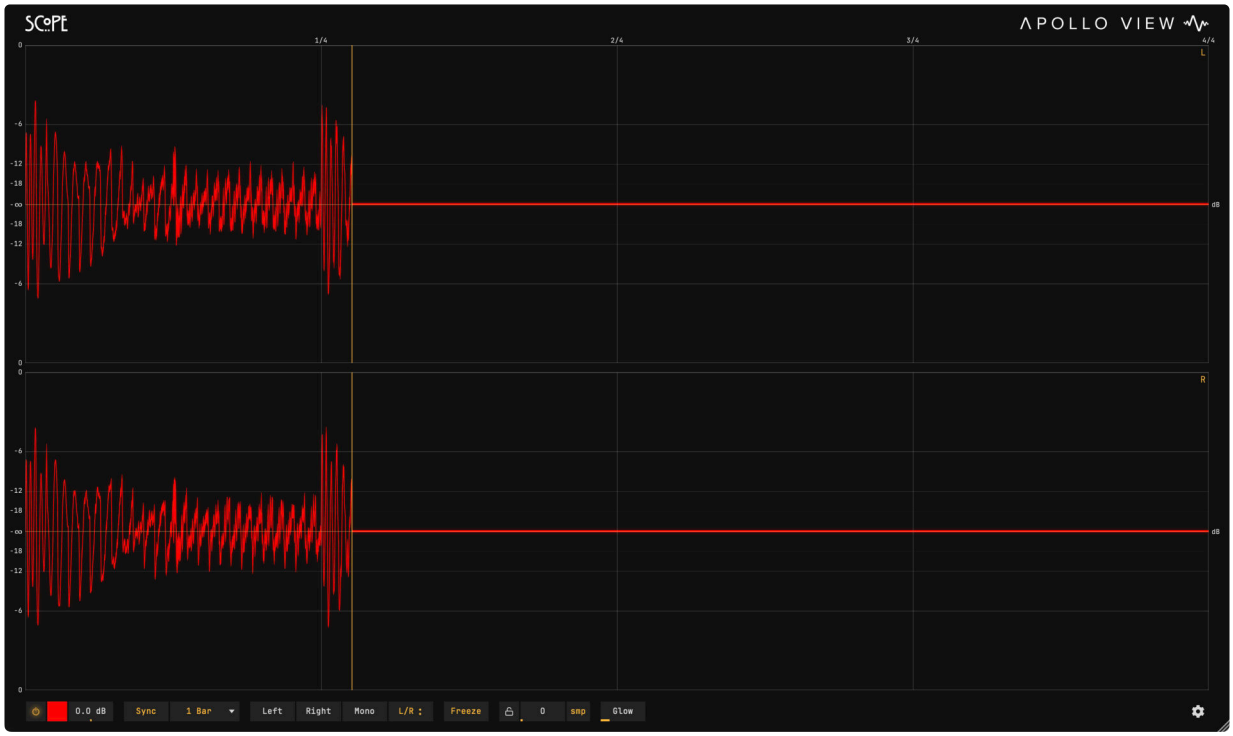
A freeze keeps the last 8 seconds, or the window on screen if that's longer, not only the frame you see. On what it kept:

- **Timebase**: it still works. A moment that has already left a short window (a 1/16 division, say, or a few milliseconds in Free-run) comes back when you pick a longer division, and a long window can be narrowed to its last beat and zoomed in. A window longer than 8 seconds shows as much as was kept.
- **Colour**: switch Colour by Frequency on or off, or pick `Solid` or `By frequency` for a channel, and the frozen waveform is redrawn that way.



Freeze, engaged.

Each instance freezes independently of the others, and Freeze is never saved with the project. A freeze stays held when you close the plugin window and open it again, but loading a project brings the plugin up live, so a reopened project always shows the live signal.



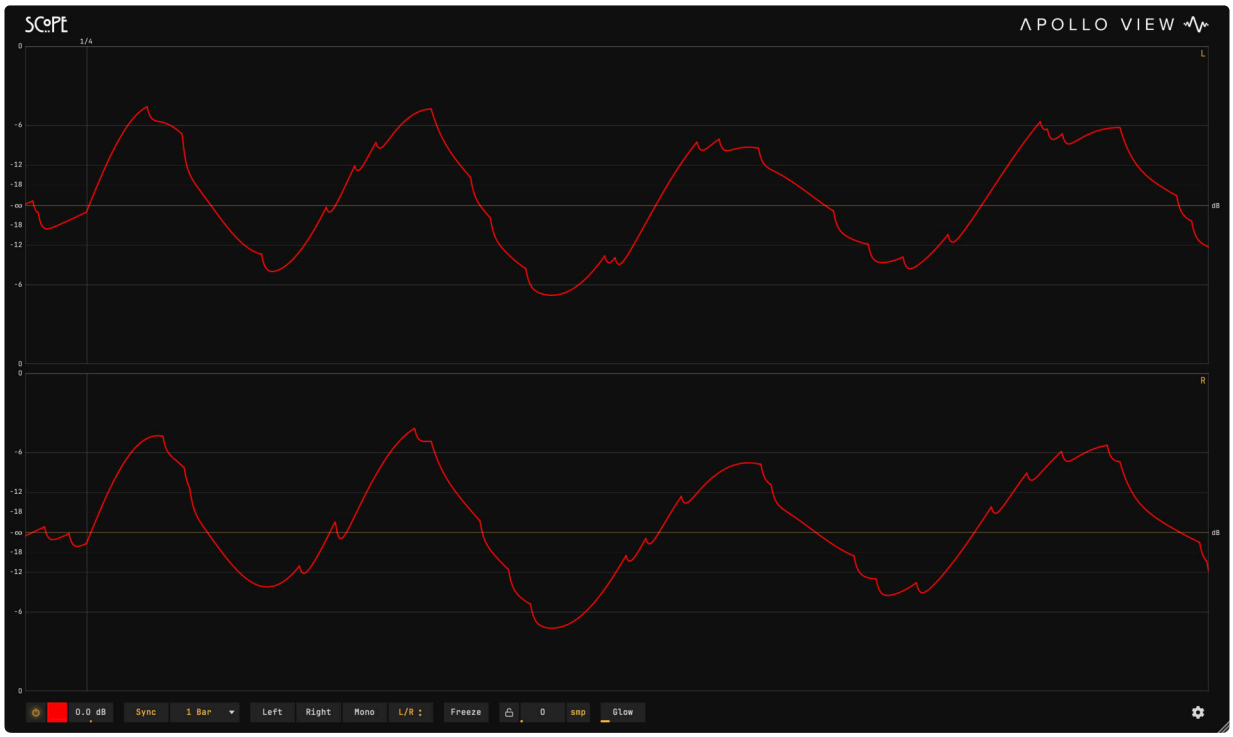
Frozen: the trace holds, the write cursor stops, the track keeps playing. Zoom into it whenever you like.

ZOOM AND PAN

Zoom magnifies one part of the window without changing the timebase, so you can look closely at a single detail: the attack of a kick, a click at an edit point, one cycle of a sub.

- **Scroll**: turn the mouse wheel over the display to zoom the time axis in, up to 64x. The point under the mouse pointer doesn't move, so put the pointer on the detail you want.
- **Cmd-drag** (Ctrl-drag on Windows): pan left and right while zoomed.
- **Double-click**: back to the full window.

Zoom works on the live trace as well as a frozen one, but not in Rolling mode. Changing the timebase resets the zoom. Pick a new division, move the Free-run slider, click the cycle button or the units button, or switch between `Sync` and `Free`, and the view returns to the full window. Turning on `Rolling` does the same. Gain and `Freeze` don't change the zoom.



Zoomed into the second kick of a one-bar window: a few slow cycles of the kick fill the display, and its start is on the 1/4 beat line just inside the left edge. Double-click returns to the full window.

Click-drag measurement with frequency, note and level readouts is part of DeltaScope.

OFFSET

Some plugins hold the audio for a moment before they output it: a lookahead limiter, a linear-phase EQ. Your DAW's delay compensation keeps the tracks in time with each other, but it can't remove the delay from the audio arriving at Scope. Put Scope after one of those plugins and the audio reaches it late, so in Sync mode the whole waveform is drawn a little after the beat lines.

The offset slider moves the waveform earlier on the display by the amount you set, up to one second, in samples or milliseconds. The `smp` / `ms` button switches the units. Set the offset to the latency of the plugins before Scope and the waveform is back on the grid.



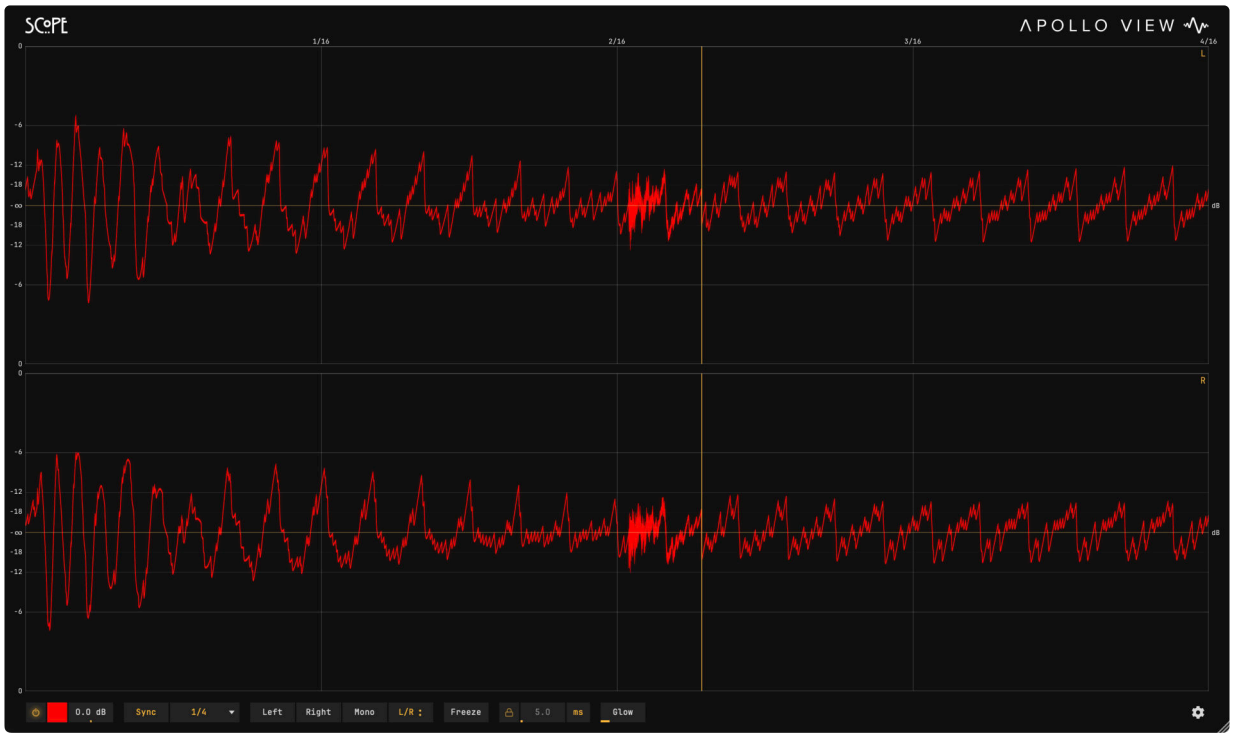
The offset cluster: padlock, offset and units, locked at 5.0 ms.

This is display alignment only; the audio is not changed. Drag the slider while watching the display until the hits are on the beat lines, or set it from your DAW's figure:

1. Find the latency of the plugin before Scope. Many DAWs show it: REAPER shows it per plugin in the FX chain window, and searching your DAW's help for "plugin latency" finds the equivalent in yours. That figure is the one to type.
2. Click the offset slider and type the figure, in samples or in milliseconds.
3. With several plugins before Scope, type their figures as a sum, `256+128+64`. The offset slider works as a calculator: it adds, subtracts, multiplies and divides, with brackets where you need them.
4. Press Enter to set the total.

Alt-click resets to 0, as long as the padlock is open.

The padlock stops the offset being changed by an accidental drag. It locks by itself ten seconds after your last drag or wheel adjustment, and immediately when you type a value. While it's locked the slider is greyed out and won't move. Click the padlock to unlock it and adjust again. Unlocking starts the same ten-second count, so if you open the padlock and then change nothing, it closes again on its own.

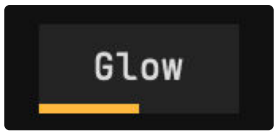


A lookahead limiter before Scope makes the waveform arrive after the beat lines; 5 ms of display offset puts it back. The padlock has locked itself, so the readout is greyed.

DeltaScope adds ADC (auto delay compensation): turn it on, start playback at a clear hit (a kick on the downbeat, say), and it measures how late that hit arrives and sets the offset for you.

GLOW

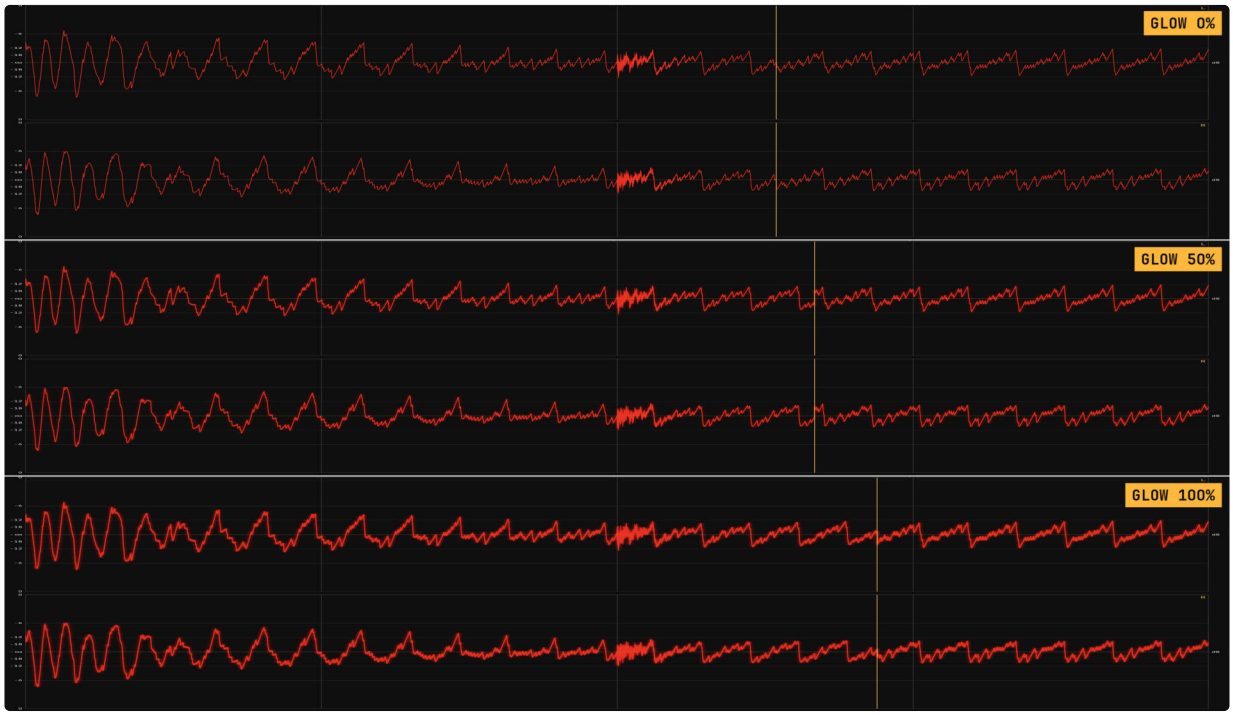
The `Glow` slider adds a phosphor-style bloom to the waveform, from a clean trace at one end to a heavy halo at the other. On a CRT oscilloscope the phosphor coating glowed around the beam and kept glowing for a moment after the beam had passed. So the trace had a soft halo, brightest where the beam passed most often. Scope imitates the halo: the glow is a soft blur of the trace, brightest where the trace is densest on the display. The glow is a visual effect only; it doesn't measure anything.



The Glow slider, part-way up: no number, just the bar.

Unlike the other sliders it shows no number, only the word Glow, so watch the display as you drag. For an exact amount, click the slider and type a value between 0 and 1: 0.5 is half glow (typing 50 gives full glow, not half). Alt-click resets to 0. The amount is saved with your project.

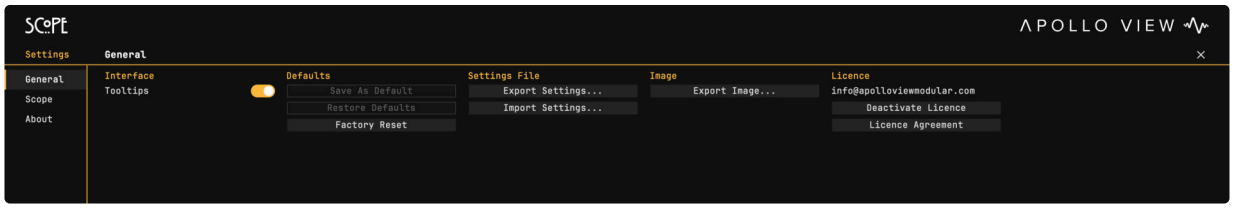
Glow is off in Rolling mode. In a normal sweep only the freshly drawn slice of the picture changes from one frame to the next. In Rolling mode the whole picture moves every frame, so it has to be redrawn in full. Adding the glow to that would slow the display down too much.



The same beat at Glow 0%, 50% and 100%: typed into the slider, that's 0, 0.5 and 1.

SETTINGS

Click the cog and Settings opens over the display. The title bar stays, so the tooltip strip keeps describing whatever you point at. The pages are listed down the left (`General` , `Scope` and `About`), and clicking a name opens that page. Each page lays its settings out in columns to fit the window at whatever size it is; a window too small to show a page whole scrolls it, as the `General` and `About` pages do at the smallest size. Close Settings with the × at the top right or with Escape. Every change applies as you make it.



Settings, General page. `Save As Default` and `Restore Defaults` are both greyed out: nothing has changed since the instance opened, and no default has been saved yet.

GENERAL

`Tooltips` turns the control descriptions in the title bar on and off. Below 978 pixels wide the title bar shows none.

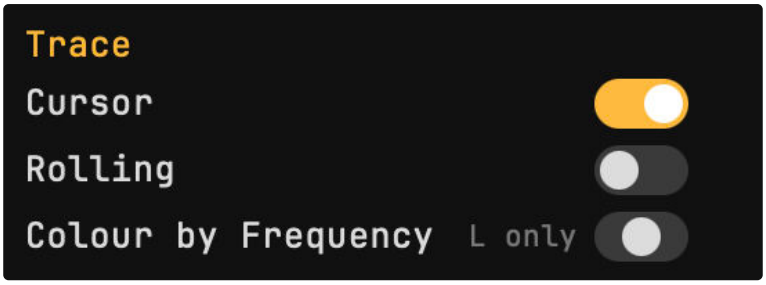
- `Save As Default` : saves the current state of this instance (window size, gain, colour, timebase, channel mode, glow and the switches in Settings) as the starting point for every new Scope you add. There's no message; the button greying out is your confirmation.
  - The display offset is left out on purpose: it matches the plugins before one particular instance in the chain, so it would be wrong for every new instance. The offset units are saved; the padlock is always open on a new instance (see What Scope remembers, in Settings).
  - The button is greyed out until you've changed something since the last save, so a greyed-out button only means there's nothing new to save.
- `Restore Defaults` : reloads your saved default into this instance, keeping its window size (greyed out until one has been saved and you've changed something for it to undo). It also sets this instance's offset to 0 and opens the padlock, because a saved default holds no offset: an alignment you have set on this instance is lost.
- `Factory Reset` : deletes the saved default and returns this instance to factory settings, window size aside.
- `Export Settings...` / `Import Settings...` : write the current settings to a file, or load one, to move your setup between machines or share it. An export holds this instance's current settings, as a project save does, not your saved default. An import takes everything but the window size, the offset included, so check the offset after you import. Import checks the file before changing anything: a file it can't read, or one from another product, is refused with a message and nothing changes.
- `Export Image...` : saves the current display as a high-resolution PNG, laid out exactly as on screen and without the controls, for a bug report, a forum post or a before-and-after in your notes (a save dialog asks where). Settings closes first: the display itself draws the image, so it has to be visible.

- Licence: the section shows the email Scope is licensed to. `Deactivate Licence` removes the stored key from this machine and returns Scope to the activation screen; `Licence Agreement` opens the EULA on our website. Without a licence the section reads Not activated, and while the licence is still being checked it reads Checking licence…; either way the button is `Activate Licence...`, which brings up the activation screen.

SCOPE

- `Clip Overlay` and `Clip Border`: the clip indicators (see Clip indicators, in The Display).
- `Cursor`: the write cursor. It has no meaning while the trace rolls, so it's dimmed then.
- `Rolling`: rolling mode.
- `Colour by Frequency`: tints the waveform by its frequency content, both channels at once (see Colour by frequency). With only one channel by frequency, set in the picker, the knob shows in the middle with a note, `L only` or `R only`.

`Reset` at the top right of this page puts only its switches back to factory settings (`Clip Overlay`, `Clip Border` and `Cursor` on, `Rolling` and `Colour by Frequency` off, for both channels); it doesn't change the main controls, `Tooltips` or your saved default.



The Colour by Frequency switch with its knob in the middle: only the left channel is by frequency, as the note says. Click it and both turn on.

ABOUT

The page shows the version and a build stamp, which tells apart two builds with the same version number, then the copyright line and the website address (a link).

`Check for Update` opens the website in your browser; nothing is ever sent automatically. `User Manual` opens this manual in your browser, always the newest version. `Report a Bug` drafts a support email in your own mail client to support@apolloviewmodular.com, pre-filled with the plugin version and build stamp, your OS, DAW, sample rate and buffer size; nothing is sent until you send it. `Request a Feature` does the same for ideas.

WHAT SCOPE REMEMBERS

Scope's settings are saved with the DAW project, so an instance opens as you left it when the project reopens.

Where	What
Saved with the project	Gain, colour and glow; `Sync` or `Free` with its division or window, the timebase units and the cycle count; the channel mode and whether L/R uses one lane or two; the offset, its units and the padlock; the window size; and the toggles in Settings.
Saved as the default (`Save As Default`)	The same set, without the offset value. The saved default keeps the offset units, but every new Scope opens with the offset at zero and the padlock open, whatever you saved.
Never saved	Power, `Freeze` and zoom.

So a reopened project always shows the live signal at full width with the display on. A project saved by a Scope older than 1.2 opens with the cycle button at `×1`, so a tone set by frequency shows one cycle per window, as it did in that version.

WHERE SCOPE KEEPS ITS FILES

Scope keeps two files outside your DAW projects, inside `~/Library/Application Support/ApolloView/` on macOS and `%APPDATA%\ApolloView\` on Windows.

File	What it is	If you delete it
`Scope.license`	Your licence.	Scope returns to the activation screen the next time it loads.
`Scope/defaults.json`	Your saved default.	New instances return to factory settings.

To find the folder:

- **macOS**: the Library folder is normally hidden. In the Finder, hold Option, open the Go menu and choose Library.
- **Windows**: paste `%APPDATA%\ApolloView` into Explorer's address bar.

Moving to a new machine

You don't need to copy either file to a new machine. Enter your email and key again there, and use `Export Settings...` / `Import Settings...` above to move one instance's settings as a single file. That file holds the instance's current settings, not your saved default, and the window size doesn't travel in it: an import keeps the window as it is.

To move your saved default too:

1. On the old machine, add a new Scope (it opens with your default).
2. Click `Export Settings...` in that Scope and save the file.
3. On the new machine, activate Scope with your email and key.
4. Open a Scope there, click `Import Settings...` and choose the file.
5. Click `Save As Default`.

ACTIVATION

Scope is free and asks once for a licence key so we can tell you about updates.

1. Get a free key from shop.apolloviewmodular.com/plugins/scope (the activation screen's `Get free licence` link goes to the same place, and `Lost your key?` opens key recovery on our website).
2. Open Scope, enter your email, paste the key (it's far too long to type, and Cmd+V (Ctrl+V on Windows) works in the field) and click `Activate`. Enter doesn't submit; the button does.

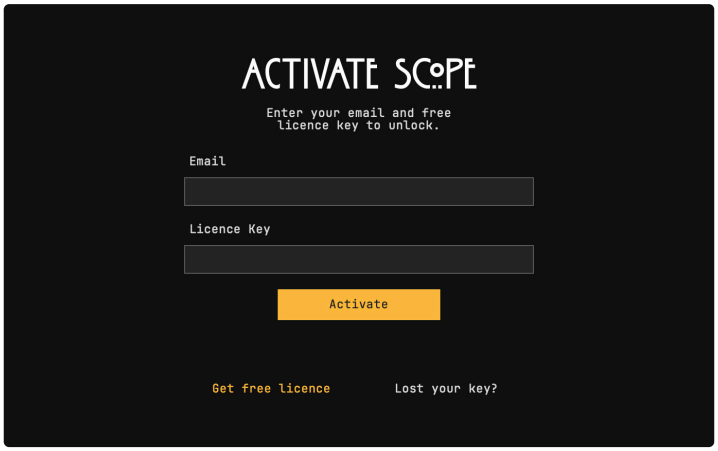
The key is checked on your machine, so no internet connection is needed; you only need to be online to get the key from the shop. The key is linked to your email address, so enter the one you gave the shop. If a key is not accepted, the activation screen says why and what to do. The reasons it gives:

- a key cut short or with extra characters (copy the whole key from your email or your account and paste it again)
- a DeltaScope key
- a key for another Apollo View plugin
- a key for a newer version of Scope or for Scope 2
- a key that does not match the email you entered

`Deactivate Licence` in Settings > General returns Scope to the activation screen.

A temporary problem with the licence file won't stop Scope working. If the licence file is momentarily unreadable while Scope is running (a cloud-sync or antivirus lock, say), Scope keeps its licence and checks again a little later. If the file is ever lost or damaged, Scope shows the activation screen again, and entering your email and key activates it again.

A line under the button reports the result. Success reads `Activated!` in gold. A failure is shown in red with the reason: a field left empty, or one of the reasons listed above. One red message is different: "Activated, but the licence could not be saved". The key was valid and Scope runs licensed for the rest of the session, but it couldn't write the licence file, so it'll ask for the key again the next time it loads. Fix the permissions on the ApolloView folder (both platforms' paths are in Where Scope keeps its files) and activate again.



The activation screen: email, key, `Activate`, and the two links to the shop below.

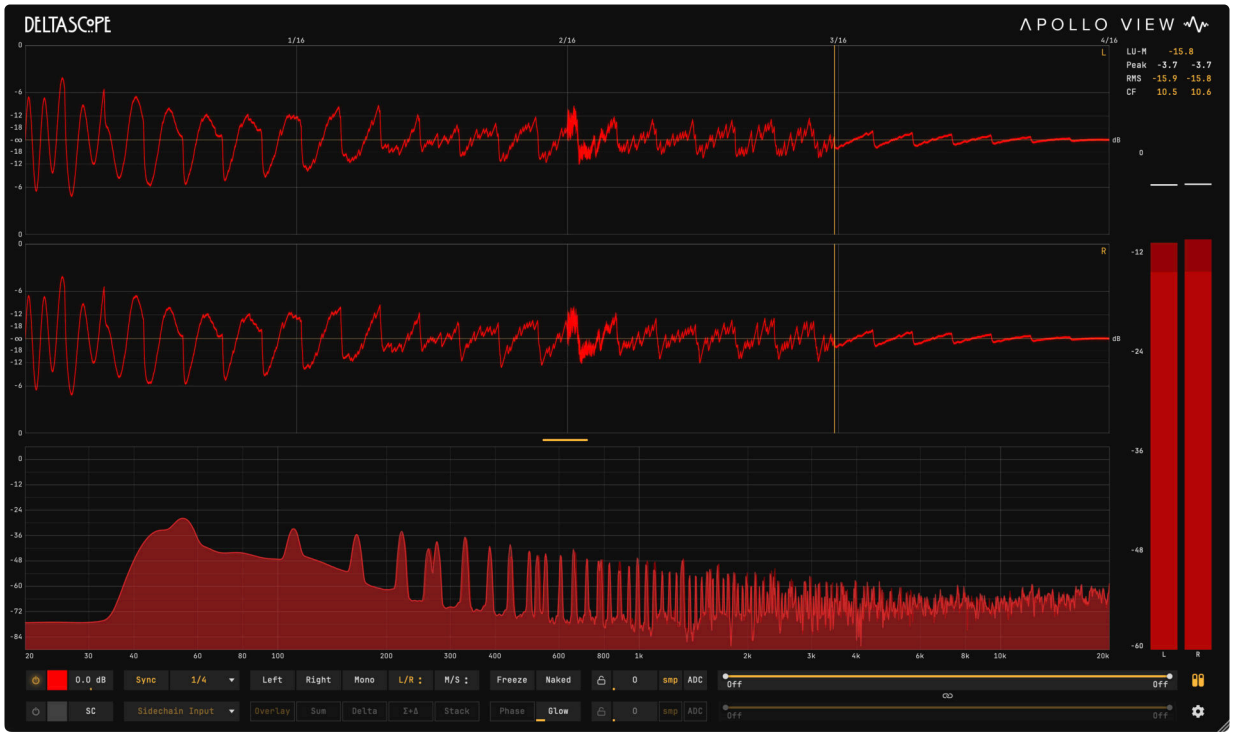
IN SHORT

Scope draws your audio as it happens and never changes it.

- `Sync` locks the display to your project's beat grid, so a part that repeats with the beat stands still. `Free` sets the window in time, as a frequency or as a note, with the cycle button choosing how many cycles of a tone are shown.
- `Left`, `Right`, `Mono` or `L/R` choose what's drawn: Mono shows the mono average, so a bass that shrinks or vanishes when you switch to it will do the same on a mono system.
- `Rolling` in Settings scrolls the waveform instead of sweeping it, for things that don't repeat.
- `Freeze` holds the picture, and zoom and pan magnify part of it. In Sync, the offset slider moves the waveform back onto the beat grid when plugins before Scope add delay.
- Clip indicators show where a signal goes above 0 dBFS, and the grid's dB labels always read the real level of the audio, whatever the display gain.
- You choose the colour and the glow amount, or let `Colour by Frequency` paint the waveform by what it contains; `Export Image...` in Settings saves the display as a high-resolution PNG.
- Every slider accepts a typed value; Alt-click resets it.
- DeltaScope is the same scope with a spectrum analyser, level meters, a correlation display, and a second input with a difference view.

UPGRADING TO DELTASCOPE

Scope is the oscilloscope inside DeltaScope, our paid analyser. DeltaScope is the same scope with a spectrum analyser below it, level meters to the right of it and a correlation display. It also has a second input, so you can compare two signals instead of watching one.



DeltaScope: the same scope at the top, the spectrum analyser below it and the level meters on the right. The bottom row of controls belongs to the second input; no reference is connected here.

- **Spectrum analyser**: the signal's level across the whole frequency range, live, in a pane below the waveform. Multi FFT keeps sub-bass detail sharp without slowing the rest of the spectrum.
- **Delta**: give DeltaScope a reference (from its sidechain input, or from another instance picked by track name) and it subtracts it from the track. Identical signals draw a flat line; with the same audio before and after a processor, what remains is the change the processing made, on screen and, with Hear the Delta, in your monitors.
- **Magnitude view**: the frequency response of the processing between the two signals, such as an EQ's actual curve, estimated live from the music itself with no test sweep or pink noise.

Feature	Scope	DeltaScope
Real-time oscilloscope display	Yes	Yes
Sync and Free-run timebases	Yes	Yes
Channel modes Left / Right / Mono / L/R	Yes	Yes
Clip border and clip overlay	Yes	Yes
Rolling mode, write cursor, colours, glow	Yes	Yes
Colour by Frequency on the waveform, per channel from the colour picker	Yes	Yes
Colour by Frequency on the analyser	-	Yes
Manual display offset (samples / ms)	Yes	Yes
Freeze, zoom and pan	Yes	Yes
Image export and settings export/import	Yes	Yes
Resizable to 4096 x 2160	Yes	Yes
Sidechain input and five comparison modes	-	Yes
Delta (null) display and Hear the Delta	-	Yes
Magnitude view (live magnitude-response trace)	-	Yes
Instance linking (compare two tracks that each have an instance, with no sidechain routing)	-	Yes
ADC (auto delay compensation)	-	Yes
FFT spectrum analyser with Multi FFT	-	Yes
Distortion readout: a test tone's THD, THD+N and IMD	-	Yes
Waveform measurement (frequency, note, level)	-	Yes
Phase correlation display	-	Yes
Level meters with LUFS and True Peak	-	Yes
Band filters (high-pass / low-pass that add no phase shift)	-	Yes
Mid/Side channel mode	-	Yes
MIDI note-locked timebase (holds a played note still on the display)	-	Yes
Naked mode (controls hidden)	-	Yes

DeltaScope is available from shop.apolloviewmodular.com/plugins/deltascope, and there's a demo mode so you can try everything first. Until you enter a licence key, the waveform goes flat and the audio mutes for about five seconds in every twenty-five, so it's for evaluation rather than for mixing.

LICENCE AND WARRANTY

Scope is licensed to you; it is not sold. Use of the software is governed by the End User Licence Agreement, which is opened by `Licence Agreement` on the General page of Settings and is also shown by the macOS installer.

Apollo View Modular Ltd supplies this software “as is” and, to the maximum extent permitted by law, accepts no responsibility for harm to persons, equipment or data caused by the operation of this product. This does not affect your statutory rights.

Please contact support@apolloviewmodular.com with any questions, bug reports or requests.

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