SCULPT.

Plugin Manual



ADPTR AUDIO SYSTEMS

SCULPT.

SCULPT MANUAL

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Introduction

ADPTR Sculpt is a multi-function lookahead dynamics processor that offers new levels of transparency and flexibility in traditional compression combined with some entirely new concepts, extensive metering and an intuitive interface.

Sculpt offers four parallel processors including

- **Upwards and Downwards Compression / Expansion**
- New **Broadband Tonal Balance Correction**
- An extremely powerful **Transient Processor.**

With over five years of development and painstaking attention to detail, we hope that Sculpt will become an indispensable part of your workflow.

Next Generation Broadband Dynamics

Sculpt, like traditional compressors, is a broadband dynamics tool. Sculpt's four core processing modules contain frequency sensitive controls and allow tonal balance manipulation using broadband gain changes alone.

The only process that Sculpt applies to your audio is a change to the gain of your input signal on a sample-by-sample basis, with optional oversampling, it will never EQ or Band-Split your audio.

New DSP

Sculpt uses a new algorithm to analyse the information from your incoming audio, functioning more like a human ear than a conventional compressor. The detection process creates almost zero harmonic distortion, allowing for precise and transparent compression and expansion, broadband tonal-balance adjustment and an extremely accurate transient processor.

To achieve this, Sculpt uses a longer look-ahead than most compressors. This look-ahead gives it an opportunity to fully resolve low frequency components in your audio, producing a distortion-free analysis. Please note - this also means a longer plugin latency which may make it unsuitable for live use.

Auto-Gain That Works

Tweaking dynamics is always a challenge. So many of the parameters change the gain of your audio that eventually it may become difficult to judge what sounds better and what is simply louder. Many compressors have an auto-gain function that attempts to compensate for this, but the problem is that the effect of your parameter tweaks on the gain depend largely on your input material, making them extremely inaccurate in practice.

Sculpt has perhaps the most advanced autogain system ever made in a dynamics processor. By clicking ‘Analyse’ and playing Sculpt a few seconds of your incoming audio, it builds a dynamic auto-gain profile for your material, calibrating all of its knobs so that your output level stays consistent as you tweak.

Transferable Presets

Many dynamics processors suffer from limited preset transferability - after loading a factory preset, or perhaps importing one from a previous project you may have to adjust the threshold and the output gain to get it to function as was intended, which isn’t always obvious.

Sculpt’s auto-gain system addresses this problem. With the auto-gain system switched on, all presets are calibrated so that your audio hits the threshold at the intended level, and the output gain is always kept constant. This means you can browse and flick between bundled presets or those from your own library and hear them as they are intended to sound.

Take Control of Tonal Balance

All dynamic processors can affect the tonal balance of audio. Sculpt embraces this by providing a first-of-its-kind dedicated Tone Sculpt module and an always-visible tonal balance graph to keep you constantly aware of how Sculpt is affecting the frequency-balance of your track.

Sculpt’s Tone Analyser graph uses a new algorithm to accurately display the tonal balance of your track before and after processing. It can also be switched to a new ‘relative’ mode which allows you to easily see just the areas of the spectrum affected by Sculpt.

Overview

1. **Gain History Graph** - shows a live display of the detected gain envelope of your input and output audio
2. **Master Gain Change Meter / Master Range Slider** Shows the current gain change (dB) being applied to your audio, and provides a slider to limit the maximum +/- gain change.
3. **Master Meters** - shows the current RMS value of the input and output audio & controls for monitoring of left/ right/mid/side channels
4. **Selected Module Control Panel** - Shows the full controls for the currently selected module
5. **Main Module Mixers** - The mixer controls for each of Sculpt's four parallel dynamics modules. Selecting a module causes its main controls to be shown in the Selected Module Control Panel (4), and its frequency-sensitive controls to be shown in the tone area (7)
6. **Master Mixer Panel** - provides a master bypass, wet/ dry mix and master control over mid/side processing.
7. **Tone Area** - Shows an interactive EQ-like graph for the currently selected dynamics module. Sculpt's live tone analyser graph is displayed behind this.
8. **Auto-Gain Panel** - Provides management for Sculpt's advanced Auto-Gain system.
9. **System Bar** - Provides a **system** menu, access to **master presets**, and **tweaks** to adjust various aspects of Sculpt's processing.



Workflow

Where Do I Put Sculpt?

As primarily a bus and master dynamics tool, it usually makes sense to place Sculpt either on your mix bus or master bus, towards the end of the effects-chain, but before any limiters or clippers. Of course you can also place Sculpt anywhere else it makes sense to add a dynamics tool.

Calibrating Auto-Gain



Whenever you begin working on a new audio project with Sculpt, it is recommended that you first enable the Auto-Gain System with the Auto-Gain on button (near the top left). Begin playing a short, representative section of your track, and engage the Analyse toggle for 3 seconds or more.

This will create an Auto-Gain profile for your audio and begin gain compensation of all of Sculpt's parameters. Your track's auto-gain profile is saved and loaded with your DAW's project, so you can safely use it for production work. If the gain or content of your input audio changes significantly, it is worth clearing the Auto-Gain data (using the Auto-Gain clear button) and performing another analysis pass.

Sculpt's Four Dynamics Modules

Sculpt's four dynamic modules are shown across the centre of the interface. They run in parallel, similarly to a traditional audio mixer, and like a mixer each has mute/solo functionality and an output meter so you can easily see how it is affecting your audio. By clicking on a module, it's full controls will be shown in the top section of the interface.

The four modules are:

- **Upwards Compression** (or downwards expansion)
- **Downwards Compression** (or upwards expansion)
- **Tone Sculpt** - Sculpt's new broadband tonal balance processor
- **Transient Sculpt** - A broadband transient processor

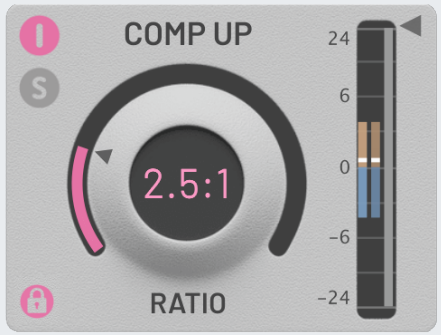
Sculpt's Module Routing

Each of Sculpt's four dynamics modules analyses the incoming audio individually, and generates a gain change signal (in dB). For example if a module is off, it emits a constant gain signal of 0dB - no change. The gain change signal of each of the four modules are summed together in the master section and this final gain change signal is used to rapidly change the gain of your input audio.

Module Mixers

Each module has a mixer section across the centre of the plugin.

- **Module On** - Toggle button in the top-left. Enables or disables this module. When disabled, the module will have no effect on the audio.
- **Module Solo** - 'S' symbol below the Module On toggle. When set on, only the effect of this module will be heard on the master output.



- **Main Rotary Slider** - This slider has a different function on each module, and represents the main control for this particular dynamics processor. This control is also duplicated in the main module controls when the module is selected.
- **Module Gain Change Meter and Range Slider** - This is the vertical meter on the right. The first two bars (just one single bar if the plugin is in mono) show the current output gain change of the module in dB (split into mid (left) and side (right) channels). The orange and blue sections show the output range over the last few seconds and the thin, white horizontal lines on top show the instantaneous output. The third bar is a Range Slider that allows you to limit the gain-change from this module to plus/minus the set amount. Internally this produces a soft range limiting effect to avoid artifacts.

  If meter precision is set to precise in the performance menu, then it is possible that the range value will be greater than can be shown on the precision meters (greater than 6dB). In this case the top and bottom edges of the range bar will be tinted red as a warning. Tweaking the parameter will cause it to be clipped to range currently visible.
- **Module Selection Lock** - When the lock icon in the bottom-left corner of each module mixer is toggled on, the module will stay selected (and showing its full controls) even when you interact with other module mixers.

Module Controls and Presets

Clicking on a module mixer will cause its full controls to be shown over the dynamics history graph in the top section. The controls available vary depending on the module.

In the top right of each set of controls, the current module preset name is shown (reading 'default' when the plugin is first loaded). By clicking on this text, a menu appears which will allow you to save and load presets for each module individually. The small left and right arrows allow quick navigation through your entire preset collection for this module.

Sculpt comes with four libraries of individual module presets. Module presets save and recall parameter settings for each of Sculpt's dynamic modules individually, allowing you to create a library of process specific presets which you can mix and match. For example, a preset for the Transient Sculpt module can be stored independently from a Tone Sculpt module or compressor module preset.

All of Sculpt's presets are organised in folders. You can create new folders and save and organise your own presets as you like. These folders will be reflected in the structure of the preset menu.

Attack and Release

Traditional compressors use their attack / release system for two distinct functions:

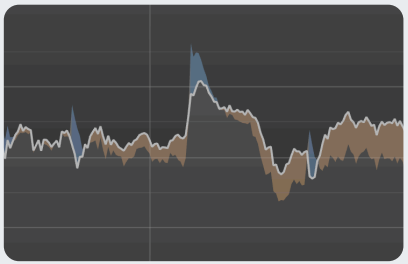
- Smoothing the detected envelope to prevent lower frequencies introducing excessive harmonic distortion
- Creative dynamic effects, including emphasising transients (with longer attack times) and creating a deliberately compressed sound, e.g. glue, or pumping (with longer release times)

Sculpt's new method of envelope detection achieves maximum speed with inaudible harmonic distortion, and does not need an attack / release system to limit distortion, so can be used entirely for creative effects.

When the attack / release system is disabled, fast 'pure' compression and expansion can be used in much smaller amounts than on a traditional compressor to increase or decrease the dynamic range transparently. When engaged, attack / release controls can be used for creative effects or to introduce a compressed sound to the audio.

Sculpt's Gain Change Notation

Sculpt uses a standardised graphic notation throughout its meters and graphs to show input and output levels, and to differentiate gain increases (orange fill) from gain reductions (blue fill).



The current output gain is always represented by a thin white line. The edge of the coloured fill, above or below this line shows the input gain. Consequently, the thicker the coloured fill at any point, the more gain-change Sculpt has applied. Additionally, at points where there is a gain reduction, the fill will be coloured blue, whereas at points where there is a gain increase, the fill will be coloured orange. If the input gain is the same as the output gain (indicating no processing), there will be no fill present, just a single white line.

This notation makes it easy to see at a glance how much gain reduction or gain increase there is, whilst also indicating the absolute input and output levels.

Sculpt & Plugin Latency

Sculpt's lookahead allows it to resolve the amplitude envelope of incoming audio with enhanced precision and response speed. The lookahead gives it the time necessary to distinguish low frequencies from amplitude changes while still being fast and responsive at higher frequencies. This method of envelope analysis is closer to human perception than that of conventional compressors.

While Sculpt's lookahead is what enables its fast and accurate processing, the plugin latency that allows this may mean that is not appropriate for some latency-critical live applications. Sculpt's current latency (in ms) can always be seen under the latency mode button.

There are two options that affect plugin latency in Sculpt:

- The latency mode setting will introduce more latency if set to Full mode.
- Setting transient enable to Disabled will decrease latency by around 100ms, but fully disable use of the Transient Sculpt module.

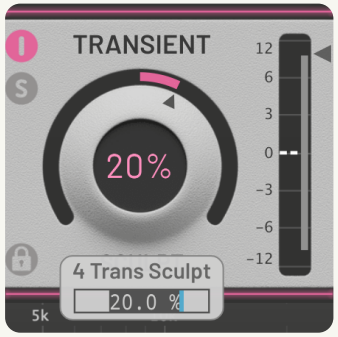
Hint System

Sculpt has a detailed hint system enabled by default. Hovering over a parameter or area causes the hint panel to appear. As a lot of Sculpt's functionality is either conceptually new, or varies from traditional dynamics tools, it's highly recommended that when you are uncertain about a control you consult this. Hints can be disabled on the System Menu (cog icon) on the very bottom-left of the interface.

Parameter Editing & Key Modifiers

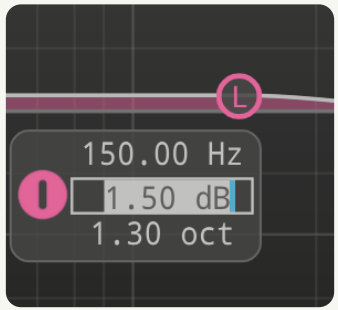
Knobs and Sliders

- **Adjust Value**
  vertical drag
- **Fine Adjust Value**
  shift + vertical drag
- **Reset to Default**
  ctrl + click (Win)
  cmd ⌘ + click (Mac)
- **Enter Value as Text**
  double-click on knob/slider



EQ-Style Handles

- **Adjust Gain**
  vertical drag
- **Adjust Cutoff Freq**
  horizontal drag
- **Adjust Bandwidth**
  scroll-wheel
- **Reset to Defaults**
  ctrl + click (Win)
  cmd ⌘ + click (Mac)
- **Enter Value as Text**
  hover over handle then double click on value in popout window



Dynamics Modules

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Module 1

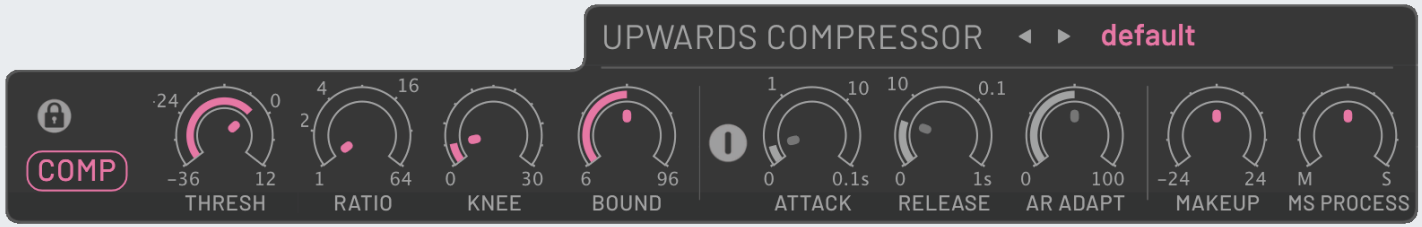
Upwards Compression / Downwards Expansion

Sculpt's first module can be toggled between upwards compression and downwards expansion, both operating only on audio with gain that falls below the current threshold. The module offers traditional compressor controls including an optional attack / release system, and a side-chain-EQ.

Upwards compression increases the gain of audio that falls below its threshold. Upwards compression is often achieved on traditional compressors using parallel compression, but Sculpt offers a dedicated upwards compression transfer function.

Downwards Expansion decreases the gain of audio that falls below the threshold, increasing dynamic range and has many possible uses, however you may find that some of these tasks are easier to achieve with the Tone Sculpt module or the Transient Sculpt module.

TIP: Upwards compression can sound more natural than downwards when attempting to change dynamic range, as it leaves the louder material, which your ears are naturally drawn to (for example transients), unprocessed.



Parameters

Mode

Toggles the upwards compressor module between upwards compression and downwards expansion.

Setting to COMP will cause it to function as an upwards compressor causing material quieter than the threshold to be made louder. Setting to EXP will cause it to function as a downwards expander causing material quieter than the threshold to have its gain reduced further.

TIP - Use Expansion for:

- Reducing the level of ambient noise or reverb tails.
- Bringing out the transients in drum tracks.
- Bringing subtle dynamic details further to the front.
- Reviving over-compressed material.

Threshold

Sets the threshold for the upwards compressor module. Audio quieter than this level will be processed by the module.

If Sculpt's auto-gain system is enabled, the threshold you set will be automatically offset (internally) to standardise the incoming audio level between different audio tracks. This means that when a preset is saved it can be reused across different projects and audio tracks, while keeping the threshold in a similar place in relation to the incoming audio's level.

Ratio

When the mode is set to COMP, this sets the ratio for upwards compression. A value of 1:1 will leave the sound unmodified, higher values will cause audio quieter than the current threshold to be increased (taking into account the current knee value).

When the mode is set to EXP, this sets the expansion ratio for downwards expansion. A value of 1:1 will leave the sound unmodified, higher values will cause audio quieter than the current threshold to have its gain reduced (taking into account the current knee value).

Without its attack / release system engaged, Sculpt operates considerably faster than traditional compressors, meaning you may need a smaller ratio to achieve an effective level of dynamic reduction.

Knee

The knee softens the processing transition when incoming audio is passing the threshold level.

When the knee is set to zero, the compressor jumps between full compression and no compression when passing the threshold. Increasing the value softens this transition and can produce more transparent results. Higher values (greater than 6dB) can lessen the overall effect of the processing.

TIP - Leaving the knee around 3dB produces good results in most situations.

Bound

Sets the bound for this compressor module.

The Bound control allows you to set the maximum gain-change that this module will produce. This functions similarly to the range setting on the module mixer below, but produces a more gradual fall off. Setting it to zero will stop the module processing audio altogether.

Attack/Release System On

Engages or disables Sculpt's optional attack / release system

> **TIP** - Unlike traditional compressors, it is not necessary to engage Sculpt's attack / release to prevent harmonic distortion.

Attack Time

Sets the attack time for this module's attack / release system. This only produces a result if the attack / release system On button is engaged.

Increasing attack times causes a compressor to react more slowly to incoming transients and peaks, allowing the initial portion of them to escape processing. A value of zero means the attack parameter has no effect.

In reality, attack and release ramps are not generally linear but rather change smoothly over time. Using Sculpt, the attack time represents the time taken for the envelope to climb to around two thirds of the incoming audio's true value.

Release Time

Sets the release time for this module's attack / release system. This only produces a result if the Attack / Release System On button is engaged.

Increasing release times causes a compressor to recover more slowly after transients and peaks, creating a period of quiet afterwards. Used subtly this can add space to a mix. With higher values, a pumping effect can be created.

Attack/Release Adapt

The adaptivity parameter offers advanced control of the attack and release ramps generated by Sculpt. Set to 0%, attack and release times function exactly as set, as on a traditional compressor.

Set to 100%, attack and release times become fully frequency dependent, with the compressor reacting more slowly to lower frequency content. This produces considerably more natural results than using fixed durations.

Values in between cause a blend of the two behaviours. In general higher values create a more natural sound, and lower values can be used to produce audible bounce and pumping effects.

Make Up Gain

The make-up gain parameter allows manual gain adjustments to be made to the output of the current compressor module.

TIP - For a clean workflow, it is recommended to leave make-up gain at zero and engage the auto-gain system to analyse and compensate the gain automatically.

Mid/Side Process (stereo plugin only)

Allows adjusting the amount of processing of the mid and side components of the audio for this dynamics module.

Sculpt analyses only the mid (mono) component of incoming audio. The generated gain-change signal for each module can then be applied to both the mid and sides (when the parameter is central), the mid only (when fully anti-clockwise) or sides only (when fully clockwise), or anywhere in between.

Applying dynamic changes to the sides or mid only can produce some interesting spatial expansions and contractions.

Side-Chain EQ

When module 1 is selected, the bottom tone area of the interface is overlaid with the side-chain EQ controls for the module.

Sculpt's side-chain EQ controls allow manipulation of the compressor/expander's frequency sensitivity. A side-chain EQ is simply an EQ that processes only a copy of the audio going into the envelope detector, not the main input/audio audio. This changes the dynamic response of the compressor without filtering the audio directly.

The side-chain EQ controls only have an effect on the audio when the audio is being processed (for example the ratio must be above 1:1). WIth them, you can push the tonal balance of the audio in a particular direction, or if you find a particular element (for example a kick) is affecting the dynamics too much, you could reduce the gain of the low shelf to reduce its influence.

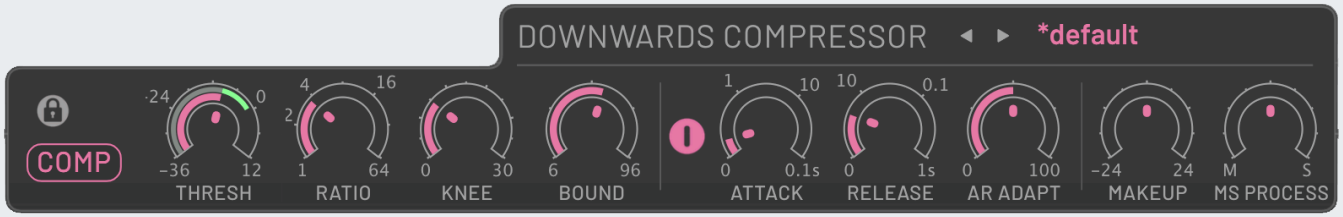
Module 2

Downwards Compression / Upwards Expansion

Sculpt's second module can be toggled between downwards compression and upwards expansion, both operating only on audio with gain that rises above the current threshold. The module offers traditional compressor controls including an optional attack / release system, and a side-chain EQ.

Downwards compression decreases the gain of audio that rises above the threshold and is the type of compression offered by the majority of traditional compressors.

Upwards Expansion increases the gain of audio that rises above the threshold, increasing dynamic range and has many possible uses, however you may find that some of these tasks are easier to achieve with the Tone Sculpt module or the Transient Sculpt module.



Parameters

Mode

Toggles the downwards compressor module between downwards compression and upwards expansion.

Setting to COMP will cause it to function as a downwards compressor meaning material louder than the threshold will be made quieter. Setting to EXP will cause it to function as an upwards expander, meaning material louder than the threshold will have its gain increased further.

Threshold

Sets the threshold for the downwards compressor module . Audio louder than this level will be processed by the module.

If Sculpt's auto-gain system is enabled, the threshold you set will be automatically offset (internally) to standardise the incoming audio level between different audio tracks. This means that when a preset is saved it can be reused across different projects and audio tracks, whilst keeping the threshold in a similar place in relation to the incoming audio's level.

Ratio

When the mode is set to COMP, this sets the ratio for downwards compression. A value of 1:1 will leave the sound unmodified, higher values will cause audio louder than the current threshold to be made quieter (taking into account the current knee value).

When the mode is set to EXP, this sets the expansion ratio for upwards expansion. A value of 1:1 will leave the sound unmodified, higher values will cause audio louder than the current threshold to have its gain increased further (taking into account the current knee value).

Without its attack / release system engaged, Sculpt operates considerably faster than traditional compressors, meaning you may need a smaller ratio to achieve an effective level of dynamic reduction.

Knee

The knee softens the processing transition when incoming audio is passing the threshold level.

When the knee is set to zero, the compressor jumps between full compression and no compression when passing the threshold. Increasing the value softens this transition and can produce more transparent results. Higher values (greater than 6dB) can lessen the overall effect of the processing.

TIP - Leaving the knee around 3dB produces good results in most situations.

Bound

Sets the bound for this compressor module.

The bound allows you to set the maximum gain-change that this module will produce. This functions similarly to the range setting on the module mixer below, but produces a more gradual fall off. Setting it to zero will stop the module processing audio altogether.

Attack/Release System On

Engages or disables Sculpt's optional attack / release system.

TIP - Unlike traditional compressors, it is not necessary to engage Sculpt's attack / release to prevent harmonic distortion.

Attack Time

Sets the attack time for this module's attack / release system. This only produces a result if the Attack / Release System On button is engaged.

Increasing attack times causes a compressor to react more slowly to incoming transients and peaks, allowing them to pass through partially before they are processed by the compressor. A value of zero means the attack parameter has no effect.

Release Time

Sets the release time for this module's attack / release system. This only produces a result if the attack / release system on button is engaged.

Increasing release times causes a compressor to recover more slowly after transients and peaks, creating a period of quiet afterwards. Used subtly this can add space to a mix. With higher values, a pumping effect can be created.

Attack/Release Adapt

The adaptivity parameter offers advanced control of the attack and release ramps generated by Sculpt. Set to 0%, attack and release times function exactly as set, much like a traditional compressor.

Set to 100%, attack and release times become fully frequency dependent, with the compressor reacting more slowly to lower frequency content. This produces considerably more natural results than using fixed durations.

Values in between cause a blend of the two behaviours. In general higher values create a more natural sound, and lower values can be used to produce audible bounce and pumping effects.

Make Up Gain

The make-up gain parameter allows manual gain adjustments to be made to the output of the current compressor module.

TIP - For a clean workflow, it is recommended to leave make-up gain at zero and engage the auto-gain system to analyse and compensate the gain automatically.

Mid/Side Process (stereo plugin only)

Allows adjusting the amount of processing of the mid and side components of the audio for this dynamics module.

Sculpt analyses only the mid (mono) component of incoming audio. The generated gain-change signal for each module can then be applied to both the mid and sides (when the parameter is central), the mid only (when fully anti-clockwise) or sides only (when fully clockwise), or anywhere in between.

Applying dynamic changes to the sides or mid only can produce some interesting spatial expansions and contractions.

Side-Chain EQ

When module 2 is selected, the bottom tone area of the interface is overlaid with the side-chain EQ controls for the module.

Sculpt's side-chain EQ controls allow manipulation of the compressor/expander's frequency sensitivity. A side-chain EQ is simply an EQ that processes only a copy of the audio going into the envelope detector, not the main input/audio audio. This changes the dynamic response of the compressor without filtering the audio directly.

The side-chain EQ controls only have an effect on the audio when the audio is being processed (for example the ratio must be above 1:1). WIth them, you can push the tonal balance of the audio in a particular direction, or if you find a particular element (for example a kick) is affecting the dynamics too much, you could reduce the gain of the low shelf to reduce its influence.

Module 3

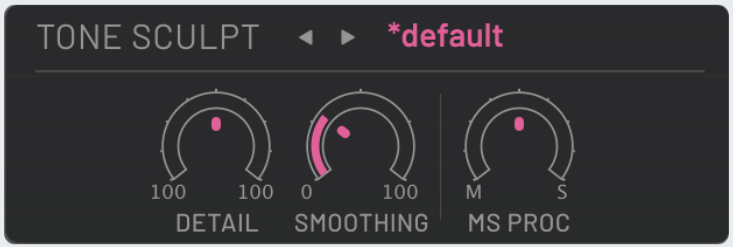
Tone Sculpt

Sculpt's Tone Sculpt module offers a new intuitive and effective way to use broadband dynamics to sculpt the tonal balance of your audio. Accentuate or tame hi-hats or kicks, change the position of vocals in a mix, reduce boxiness or increase presence through simple adjustments of the EQ-like interface.

Sculpt's Tone Sculpt module does not actually EQ or band split the audio, but simply accentuates or suppresses different moments in the audio, producing a result that is closer to rebalancing the individual elements of a mix.

Broadband compressors have long been used by professionals as a tool to correct the tonal balance of tracks, sidestepping many of the problems associated with conventional equalisation. While side-chain EQs and carefully crafted parameters can shift the tonal balance of a track in the right direction, the effect is only as strong as the amount of compression you are willing to add to a track. The process can be detailed and laborious, and add unwanted compression artifacts to the result.

Sculpt's Tone Sculpt module is designed with this function in mind, solving both these problems by providing an intuitive EQ-like interface and freeing the tonal correction process from the constraints of compression. Sculpt calculates an ultra-fast gain signal that will push the audio's tonal balance towards the spectrum you specify, by instantaneously boosting moments that match your target balance and attenuating moments that don't.



TIP - When Tone Sculpt is used with heavily amplitude-modulated material (for example, some snares or hi-hats), the material can inter-modulate with low frequencies in a bass or kick and cause distortion. In this case, use the tone smoothing control to eliminate the distortion.

Parameters

Tone Sculpt EQ Area

When module 3 is selected, the bottom tone area of the interface is overlaid with the Tone Sculpt module's main controls. These allow manipulation of the target tonal balance with an EQ-like interface. The amount of tonal shift possible (using Sculpt's broadband tone rebalancing) is very much material dependent. In general, the more dynamic the incoming audio, and the more distributed over time the frequencies in the track, the further you will be able to transparently push the audio in the direction of your choice.

TIP - Adjusting the high/low balance of the track can also change the overall rhythmic feel of a track. Be warned that with any dynamic process, pushing one element to an extreme can produce unwanted dynamic shifts in other elements of the audio.

Tone Detail

The tone detail processor operates independently of the rest of the Tone Sculpt module, and provides a unique and sometimes very useful dynamics processing technique. It is not affected by the current Tone Sculpt EQ settings.

Setting tone detail to a negative value, can 'tame' resonant moments in the audio, and setting it positive boosts these moments instead. This has the effect of calming or exciting the tonal content of a mix.

Under the hood, when the tone detail is set to a negative value, Sculpt rewards (makes louder) moments that have a balanced broadband spectrum, and penalises (makes quieter) moments that have a more resonant/coloured spectrum. This can help tame mixes that have elements that 'stick out' too much, or have some painful, tonal transients in them, for example.

Conversely, when set to a positive value, Sculpt will reward moments that are resonant or have more tonal colour, bringing out strong tonal sounds, such as solo vocals or leads, or frequency specific hits, such as a kick or a resonant snare.

Tone Sculpt Smoothing

This parameter allows the addition of smoothing to the Tone Sculpt module (including the tone detail processor). Lower values produce a faster, more natural response over a wider range of tone settings. It is recommended to set the tone smoothing 0% for new projects and only to increase it if you run into problems.

When Tone Sculpt is used with heavily amplitude-modulated material (for example, some snares or hi-hats), the material can inter-modulate with low frequencies in a bass or kick and cause distortion. In this case, setting the Tone Smoothing parameter to a value greater than zero will eliminate this distortion at the expense of a slightly slower response and slightly less transparent processing. It should rarely be necessary to set the parameter beyond 50%.

Mid/Side Process (stereo plugin only)

Allows adjusting the amount of processing of the mid and side components of the audio for this dynamics module.

Sculpt analyses only the mid (mono) component of incoming audio. The generated gain-change signal for each module can then be applied to both the mid and sides (when the parameter is central), the mid only (when fully anti-clockwise) or sides only (when fully clockwise), or anywhere in between.

Applying dynamic changes to the sides or mid only can produce some interesting spatial expansions and contractions.

TIP - With Sculpt's fast and frequency targeted processing, stereo enhancement can often be achieved even while leaving Mid/Side Process at its default, as moments containing panned elements (e.g. hi-hats) can be focused and enhanced independently from other elements.

Module 4

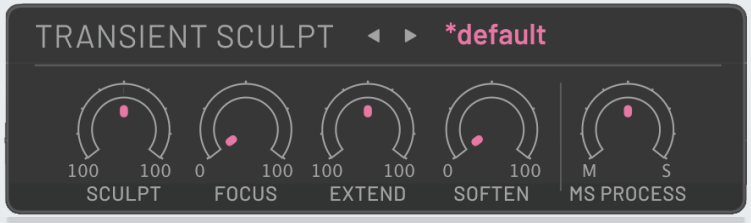
Transient Sculpt

Sculpt's Transient Sculpt module manipulates impulses and onsets with a new level of consistency and transparency. On full mixes it can feel like you are controlling the level of a drum bus independently to the rest of the mix.

As well as simply and effectively increasing or decreasing the power of transients with one knob, Sculpt contains extra parameters to control the amount of transients processed, to increase the duration of the processing, and to target specific frequencies more or less.

Transients are the brief moments of increased gain, whether individual short impulses (for example a dry snare) or the onset of a longer sound (for example, the pluck at the beginning of a guitar note).

Sculpt targets just these moments, and enhances or suppresses them naturally and transparently. This can, for example, increase the physical punch of drums, or reduce the onset so much that it leaves only the tails or ambience, moving them back in the mix.



Parameters

Transient Sculpt

Enhances or suppresses transients. Set to zero, no processing will take place. Larger values will increase the gain of transients and lower values will reduce the gain.

The exact amount of gain-change is dependent on the incoming audio material and other parameter settings, but if desired, the maximum gain-change can be limited using the module's range slider on the transient module mixer below.

Transient Focus

Makes the Transient Sculpt module more or less selective of which transients are processed. A lower transient focus value operates on lower and higher power transients, a higher transient focus value will operate only on higher power transients, meaning overall fewer transients are enhanced.

Param - Transient Extend

Increasing the transient extend value changes the overall duration of the transient processing for each transient.

Negative values will enhance or suppress just the initial transient itself, positive values will cause more of material following the transient to be processed. Zero provides a good balance for most purposes.

Param - Transient Soften

In most cases transient soften should be left at zero. Increasing it causes the very beginning of an enhanced transient to be left unprocessed. If you are dealing with material with very sharp attacks, increasing transient soften will prevent the onset from becoming too harsh.

TIP - In many cases, a better solution than Transient Soften may be to use the module's range slider to limit the maximum output of the Transient Sculpt module.

Mid/Side Process (stereo plugin only)

Allows adjusting the amount of processing of the mid and side components of the audio for this dynamics module.

Sculpt analyses only the mid (mono) component of incoming audio. The generated gain-change signal for each module can then be applied to both the mid and sides (when the parameter is central), the mid only (when fully anti-clockwise), or sides only (when fully clockwise), or anywhere in between. Applying dynamic changes to the sides or mid only can produce some interesting spatial expansions and contractions.

Transient Emphasis

When module 4 is selected, the bottom tone area of the interface is overlaid with the Transient Sculpt module's transient emphasis controls.

Sculpt's transient emphasis controls allow frequency-based selection of transients processed. The direction of the controls are standardised so that a higher value in the EQ-shape always links to a potential louder presence in the output.

For example if you use the controls to emphasise higher frequencies, then transients containing more high frequency content will be accented more when the Transient Sculpt is set greater than zero (transient enhancement), but will be suppressed less when Transient Sculpt is set less than zero (transient reduction).

This provides a convenient way to enhance or control transients in particular parts of the mix, for example increasing the click of a hi-hat or taming the initial boom of a kick.

Auto-Gain Panel

SCULPT.



Auto-Gain Panel

Auto-Gain and Workflow

Sculpt's advanced auto-gain system serves three main purposes:

- **It allows you to compare your unprocessed and processed audio at a similar loudness.**
- **It compensates for the effect of all of Sculpt's parameters on the overall output gain, allowing you to hear the genuine effect of a parameter tweak without being distracted by changes in loudness.**
- **It allows presets to be saved, loaded, and compared without any manual adjustment of thresholds, and allows comparison of those presets with a standardised gain.**

Many compressors have a basic auto-gain system. However, as the effect of their processing is highly material-dependent, they can not predict the effect of their own processing on the audio, and therefore can not compensate for the gain change with any accuracy at all.

Sculpt's enhanced accuracy is enabled by analysing a few seconds of your input audio. Having captured this auto-gain profile, Sculpt uses the frequency-dynamic content of your audio to calibrate the gain compensation of every plugin parameter.



Auto-Gain & Presets

Presets in traditional compressor plugins are of limited use, due to the preset's effect being highly dependent on the current audio being processed. For example, comparing presets may involve adjusting the threshold for each, and manually matching the output gains to compare them fairly. With Sculpt all you need is to analyse a brief section of your track, and Sculpt's auto-gain system handles these changes automatically and instantly.

For this reason, the auto-gain profile and auto-gain parameters are not stored with Sculpt master presets. This allows you to compare the effect of multiple presets with the same incoming audio.

As well as standardising output gain, another effect of your auto-gain profile is to allow Sculpt to standardise the gain at which the incoming audio is passed to the compressor thresholds. This means that if you create and save a new preset with your threshold carefully set, when you use this preset in a different project (with a different auto-gain profile set), the threshold will be internally adjusted to operate at a similar point on the new audio.

Saving Auto-Gain Profiles

Although the current auto-gain profile is not saved with presets, it is saved with your DAW's project. It can also be manually saved and restored from the auto-gain menu. To aid with managing your auto-gain profile, Sculpt offers four slots to save and recall profiles. As well as being used to store alternative auto-gain profiles, the auto-gain profile slot select can be automated in your host, allowing you to use different auto-gain profiles for different sections of your track, if necessary.

Parameters & Controls

Auto-Gain On

Toggles the auto-gain system on or off. When set on, all of Sculpt's parameters will be compensated such that the loudness of Sculpt's output remains constant.

It's important to use the auto-gain profile analyse button to analyse an auto-gain profile for your audio. If the auto-gain status reads none or needs more, this means a profile has not been recorded, and Sculpt will use its default auto-gain profile which is not much more accurate than that of a conventional compressor.

Auto-Gain Analyse Toggle

Toggles auto-gain analysis on or off. You can use this to record an auto-gain profile. You should play a representative section of the audio you will be processing and then click the Analyse button to turn it on. The auto-gain status will change colour when enough audio has been analysed. Toggle the button off to stop recording.

The recorded auto-gain profile is cumulative, so if you want to add excerpts from several sections of your track to your auto-gain profile you can pause analysis, start playing a different part of your track, and toggle analysis back on.

If the gain or balance of your input audio changes significantly, it may be worth clearing the auto-gain profile using the auto-gain Clear button and recording a new profile.

To the right of the Analyse button, you can see the current status of your auto-gain profile. If no audio has been analysed, it will show 'none'. If some audio has been analysed, but not enough, it will display 'more'. Otherwise it will show the current length of recorded audio in seconds.

Auto-Gain Slot Select

Selects the current auto-gain stored state slot, from A to D. Any recording to the auto-gain profile will be local to this slot, allowing you to switch between up to 4 different auto-gain profiles in one instance of Sculpt.

As well as being used to store alternative auto-gain profiles, the auto-gain profile slot select can be automated in your host, allowing you to use different auto-gain profiles for different sections of your track, if necessary.

Auto-Gain Clear Button

Clears the current auto-gain profile. This should be done before recording a new profile (for example, if the gain or balance of your input audio changes significantly).

Tone Panel


COMP
THRESH
RATIO
KNEE
COMP DOWN
7.5:1
RATIO
TONE
16%
TILT
27%
SCULPT
OMP UP
1.3:1
RATIO
SIDECHAIN-EQ
100 %
495.00 Hz
20.25 dB
2.77 oct
copy
paste
50
100
500
1k
5k

Tone Area

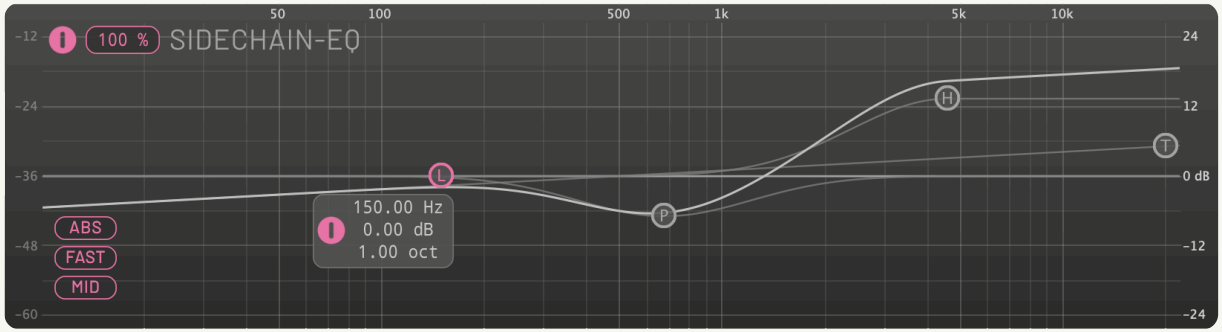
Frequency-Sensitive Controls

The tone area displays two graphs on top of each other, with both sharing the same x-axis (frequency). In the foreground, module-specific EQ-like controls allow manipulation of the selected module's frequency characteristics.

Each of Sculpt's four modules has an independent set of frequency-sensitive parametric EQ-like controls. As Sculpt does not EQ or band-split your audio, these controls do not directly process your audio but affect Sculpt's analysis and generation of its broadband gain-change signal.

Each module's controls consist of 4 components:

- **Low-Shelf** - this provides more flexibility than the familiar high-pass at the bottom end, but when used strongly can produce similar results
- **Peaking**
- **High-Shelf**
- **Tilt** - Tilts the spectrum towards low or high frequencies. Useful for subtly shifting the tonal balance of audio up or down the spectrum. Provides a fixed dB/Octave change.



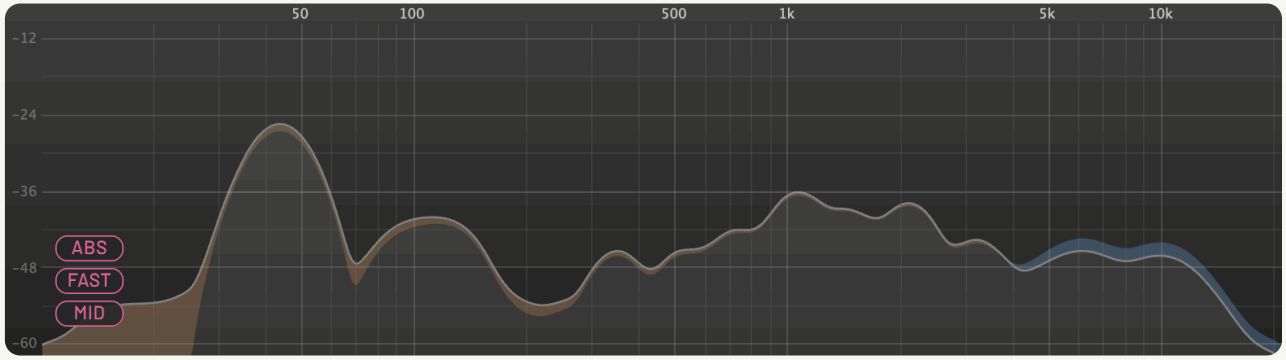
Both shelving filters and the peaking filter have bandwidth parameters to control the width of the transition. In Sculpt, the bandwidth units are defined as the number of octaves taken for the transition to reach half its target gain.

Situated in the top left of the tone area is a toggle to enable or disable the entire frequency-sensitive section for the selected module. Next to this, a fade parameter allows fading of the entire response for the selected module. A value of 100% provides the full range, and 0% will disable the section. Negative values provide an inverted response.

Tone Analyser Graph

The tone area displays two graphs on top of each other, with both sharing the same x-axis (frequency). The background graph shows Sculpt's tone analyser, which uses a new technique to intuitively visualise the tonal balance of Sculpt's input and output audio.

The graph shows the current power within your track at different frequencies, averaged to a resolution of around a third-octave. This provides a great way to check for tonal imbalances in your track at a glance. The white line represents the output audio levels, and the outer edge of the coloured region shows the input gain, using Sculpt's standardised gain-change colouring.



Unlike a standard spectrum analyser, the tone analyser does not visualise peak frequencies (not a good reflection of tonal balance) but shows the comparative power of your audio over the spectrum. For example pink noise which is defined by having equal power per octave will produce a roughly flat response. The relative shape of your track's tonal balance on the graph is more important than the absolute values, and likewise, the area of any region on the graph is more important than peak values. For reference however, a single, full-amplitude sine wave will show a peak on the graph at around -8dB.

TIP - If processing full mixes, it may be useful to first use the tone analyser to view the shape of some reference tracks for comparison with your own.

Parameters

Tone Analyser Mode

Switches between two display modes for Sculpt's tone analyser.

The first, ABS (absolute) displays the tonal balance of input and output audio using absolute values, so values are comparable up and down the frequency spectrum. The second mode, REL (relative) shows only the difference in tonal balance between the input and output audio over the frequency spectrum.

In relative mode, if Sculpt is currently not processing for any reason (and the input and output audio are identical) you will simply see a flat horizontal line at 0 dB. If Sculpt's processing is causing an increase in power only around 1000Hz, you will see a flat horizontal line with a bump around 1000Hz on the x-axis (frequency).

Relative mode does not tell you anything definite about the tonal balance of your input audio, but rather shows the effect Sculpt's processing is having on tonal balance. Sculpt will also ignore any gain differences between input and output levels, so if your input and output audio differ only in gain (but have the same tonal balance), you will still see a flat horizontal line at 0 dB.

Tone Analyser Response

Switches between response times for Sculpt's tone analyser. A faster mode will show shorter term changes in tonal balance, whereas a longer mode averages changes over a longer time, and may make it easier to see the overall tonal balance of your audio.

Tone Analyser Channel (stereo plugin only)

Switches the tone analyser between display of the Mid channel or the Side channel.

Technical Notes

For those interested, Sculpt's tone analyser is closest in spirit to a spectral power histogram divided into third-octave bars (such as that found in ADPTR Metric AB). The limitation of this approach is that frequencies respond differently on the graph depending on where they fall within the third-octave band. For example sweeping a sine wave through third-octave power bars will cause a single bar to show a high value when the sine wave's frequency is centred on the bar, but when on the edge of the bar, two neighbouring bars will share a single, lower height.

For this reason, taking a third-octave bar graph and interpolating it or smoothing it is not a sensible solution, as it implies resolution in the graph that is not actually there. Like a third-octave power graph, Sculpt uses the Power Spectral Density (PSD) as the basis for its calculation, but Sculpt's new algorithm uses a full spectrum integration that smoothes the PSD whilst keeping the area accurate and all frequency levels consistent at all points in the spectrum. For example, sweeping a sine-wave up the spectrum will produce a matching peak at the frequency, with a constant gain, unlike a third-octave histogram which will oscillate as the sine passes through the individual bars.

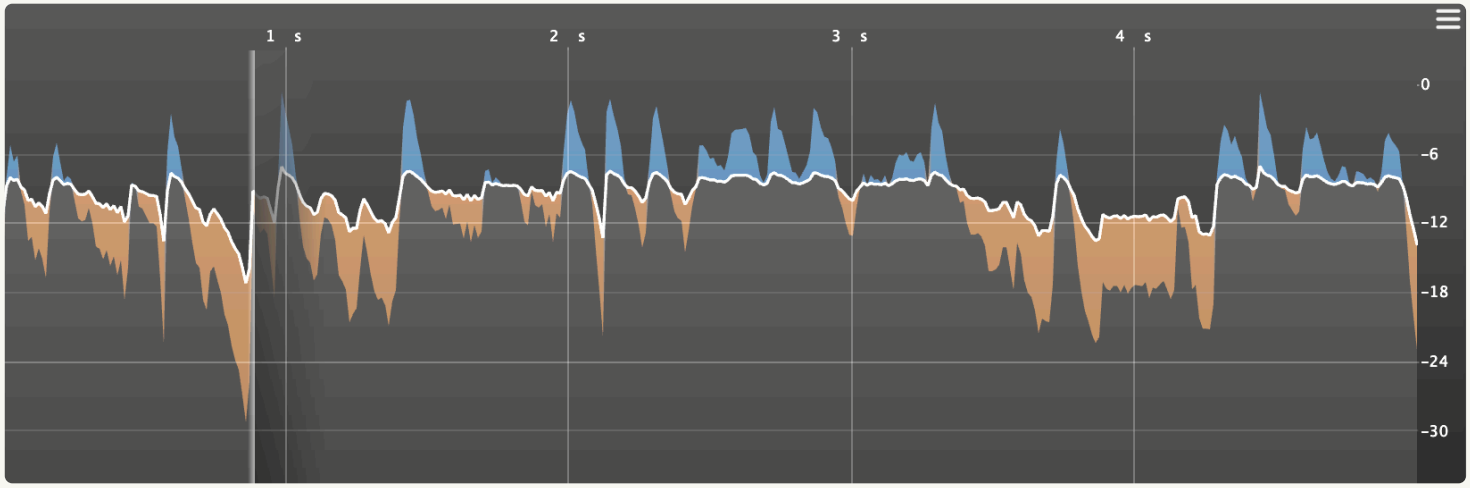
History Area

Gain History Graph

Sculpt's gain history graph shows you a live display of the detected gain envelope of your incoming audio, as well as the gain of the output audio, after processing by Sculpt.

The graph shows time (seconds or bars) on the x-axis, and the detected gain in dB on the y-axis. The thicker white line represents the current output audio, and the outer edge of the coloured region shows the input gain, using Sculpt's standardised gain-change colouring.

The gain values shown are based on Sculpt's internal analysis algorithm, so do not exactly correspond with either standard peak or RMS measurements.



History Graph Duration Menu

The menu button in the top right allows a choice of transport-synced or fixed durations for the history graph.

TIP - If Sculpt is functioning but you find the Gain History Graph is blank, it may be that your host is not sending transport data to Sculpt. In this case try changing the display to a time-based one (e.g. 10 s) in the menu at the top-right of the graph.

History Graph Scale Bar

The vertical scale (gain) can be controlled by clicking and dragging on the right hand side vertical axis of the history graph.

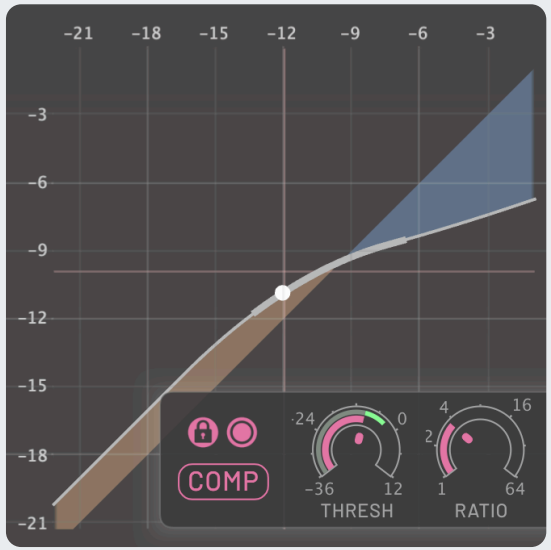
Drag vertically on the scaling bar to move the visible area of the meters display up and down. Drag horizontally to zoom the meters in and out.

Transfer Function Graph

Sculpt's transfer function graph can be shown when either of the compressor/expander modules is selected, and shows a live view of that module's transfer function - the mapping of input gain (x-axis) to output gain (y-axis).

The large dot on the graph shows the current instantaneous in /out gain of the module, and the thicker line shows the recent min / max range. The coloured area shows the amount of potential gain-change, using Sculpt's standardised gain-change colouring.

The two toggle buttons in the selected module control panel provide functionality for locking the visibility and showing and hiding the transfer function graph.



Master Area

Master Controls

Master Mix

Allows you to mix the unprocessed incoming audio into Sculpt's output.

Set to 0% (dry), only the unprocessed audio will be output, set to 100% (wet), only the processed audio will be heard (default)



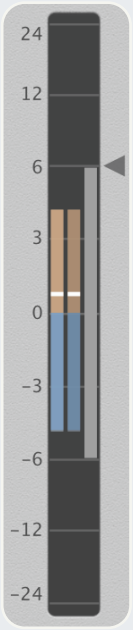
Master Mid/Side Process (stereo plugin only)

Allows adjusting the amount of processing of the mid and side components of incoming audio for all modules.

Each processing module analyses only the mid (mono) component of incoming audio. Using the module's mid/side process controls, the gain-change signal of each module can be panned to affect the mid, sides or both. Finally, the mid/side gain-change signals from each module are summed, and the overall mid/side balance can then be adjusted using this control.

Master Range

Situated at the top of the UI, to the left of the master meters, the master range meter functions similarly to the module mixer range meters, but operates on the final gain-change signal generated by Sculpt.



The two bars on the left show the current output gain of the module in dB (split into mid and side channels). The thin white line shows the instantaneous output, and the longer bars show the output range over the last few seconds.

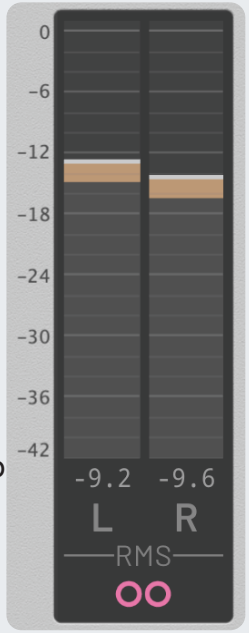
The third bar is the Master Range Slider that allows you to limit Sculpt's total gain change to plus/minus the set amount. Internally this produces a soft range limiting to avoid artifacts.

If meter precision is set to precise in the Performance Menu, then it is possible that the range value will be greater than can be shown on the precision meters (greater than 6dB). In this case the top and bottom edges of the range bar will be tinted red as a warning. Tweaking the parameter will cause it to be clipped to range currently visible.

Master Meters

The master meters display Sculpt's current input and output levels.

The thicker white line represents the current output audio, and the outer edge of the coloured region shows the input gain, using Sculpt's standardised gain-change colouring.



The input and output levels on the master meters are standard RMS levels, unlike the levels shown in the rest of the plugin which use Sculpt's internal loudness detection algorithm. The meter can be switched between Left/Right and Mid/Side mode.

The area with the annonation to the left of the meters is the scaling bar which can be used to customise the meters to a range suitable for your project. Drag vertically on the scaling bar to move the visible area of the meters display up and down. Drag horizontally to zoom the meters in and out.

Master Meters Mode (stereo plugin only)

The bottom toggle, below the RMS legend allows switching the levels displayed by the master meters between left/right mode and mid/side mode.

Channel Solos (stereo plugin only)

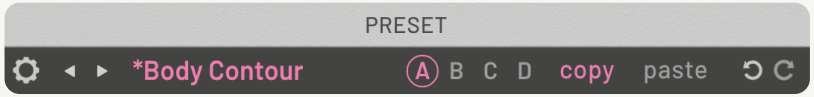
The two buttons underneath the master meters (reading either L R or M S depending on the setting of master meters mode toggle) allow soloing of an individual output channel. This is purely a diagnostic tool to allow you to isolate and hear the audio of the left, right, mid or side channel individually.

System Bar

Master Preset Section

Sculpt comes with a comprehensive library of master presets and 4 libraries of individual module presets. Master presets save and recall almost all settings, including those of the 4 dynamics modules.

Clicking on the current preset name opens a menu allowing you to select a master preset to load. All of Sculpt's presets are organised in folders. You can create new folders and save and organise your own presets as you like. These folders will be reflected in the structure of the preset menu. The previous and next buttons allow you to navigate through all presets in all folders.



Master Slots A-D

Sculpt also comes with four patch slots. Clicking on one makes it the current slot, from A to D. All parameter or preset changes you make will be local to the currently selected slot, allowing you to switch between and compare up to 4 different patches in one instance of Sculpt.

Each slot saves and recalls all plugin settings, except for your recorded auto-gain profile, which is conceptually linked to your current input audio (or DAW project), rather than your current Sculpt patch.

Undo & Redo

Undo and Redo buttons operate as you would expect, tracking all tweaks, preset selections and other user interactions.

System Menu

In the bottom-left of the UI, clicking on the cog icon opens the system menu.

Editor Size

Allows selection of an editor window sizes.

Theme

Allows selection of an editor colour palettes.

Open GL (Windows only)

Allows disabling of Open GL rendering on Windows. This is provided for rare situations where Open GL rendering is causing problems with specific GPU setups. It is highly recommended to keep Open GL rendering on where possible as it is much more CPU efficient.

Replay Tours

Replay the introductory or update tours.

Hints

Enable or disable hover hints. These provide a lot of detailed information on Sculpt's controls.

Tweaks Area

The tweaks area provides access to several parameters that customise the core behaviour of Sculpt.



Undo & Redo

Undo and Redo buttons operate as you would expect, tracking all tweaks, preset selections and other user interactions.

External Side-Chain Select

Like most dynamics tools, Sculpt offers the option to use an external side-chain for its envelope detection. This is intended for expert users only as due to Sculpt's detection speed it needs to be used with more care than on conventional compressors, or serious artifacts could be introduced to the processed audio. Generally it is safer to use Sculpt's built-in side-chain EQ sections where possible.

Please Note the following if you intend to use an external side-chain to drive Sculpt:

- If you are using an EQ-ed or similar version of the main input audio to drive the external side-chain make sure it is exactly latency compensated to align with the processed audio, or it will cause significant noise and other artifacts. The ability/method for doing this will vary from DAW to DAW.
- If using an EQ-ed version of the main input audio to drive the external side-chain, you must use only linear-phase EQs which have correct plugin latency compensation built in. Other forms of EQ (e.g. minimum-phase) will introduce latency changes at different frequencies causing significant artifacts as the side-chain envelope will not line up with the processed audio.
- It is not advised to use completely unrelated audio to drive Sculpt's external side-chain, unless processing is heavily smoothed using long attack and release times.
- A powerful advanced technique when using Sculpt on your master bus is to create an extra bus which receives an entirely independent mix of all your channels, and feed that to the external side-chain (ensuring all latency is correctly compensated). By reducing or increasing the gain of individual channels in this new bus's mix, you can control the element's prominence in Sculpt's processing of the master mix.

Performance Menu & Latency Display

The performance menu provides a number of options to configure Sculpt and adjust the balance between quality, plug-in latency and CPU load.

Sculpt's lookahead provides Sculpt with the time necessary to distinguish low frequencies from amplitude changes, whilst being ultra fast and responsive at higher frequencies.

TIP - Run Sculpt in Full Lookahead mode and Full Transient Lookahead mode whenever lower plugin latencies are not critical.

Lookahead

Selects the envelope detection lookahead mode, which changes the length of the lookahead available to Sculpt. This setting affects the envelope detection response of every module.

Full mode provides more accurate low-frequency analysis and results in more transparent processing, but also means the plugin runs with a higher latency. Medium and Short mode use shorter lookaheads, but at the cost of a less precise response, especially at lower frequencies.

Transient Lookahead

Selects the lookahead mode used by the Transient Module, to seperate out transients from other material. This control only has an audible effect when Transient Module is set to 'Enabled'.

Setting to Full provides the most natural and consistent transient processing. Medium and Short mode sacrifice a little consistency for a lower plugin-latency.

Transient Module Enable

Allows hard-disabling of the transient module for situations where it will not be required at all. The only advantage to hard-disabling it is that it will reduce Sculpt's plugin latency.

Over-Sample

Allows selection of the oversampling factor used during Sculpt's gain processing. The actual upsampling ratio used for each setting depends on your project's sample-rate. The ratio currently being used is shown within the menu.

TIP - Using an over-sample setting of Standard (which upsamples to at least 88.2kHz) is recommended for nearly all use cases. Tests have shown that over-sampling levels of High or Very High produce an inaudible level of benefit whilst consuming more CPU. This is due to Sculpt's symmetric envelope detection which introduces unusually low levels of harmonic distortion.

Meter Precision.

By default this is set to 'full range' meaning Sculpt's four module range meters and master meter show a broad range of values. For precision work such as mastering, meter precision can be set to 'precise', which limits the visible range to +/- 6dB.

In this mode it is possible that the range value will be greater than can be shown on the precision meters (i.e. greater than 6dB). In this case the top and bottom edges of the range bar will be tinted red as a warning. Tweaking the parameter will cause it to be clipped to range currently visible.

ADPTR AUDIO SYSTEMS

SCULPT.

CREDITS and THANKS

Product Design and Concept : **Theo Burt / Marc Adamo**

DSP & Development : **Theo Burt**

UI Design: **Marc Adamo / Theo Burt**

UI: **Burdallo Design**

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