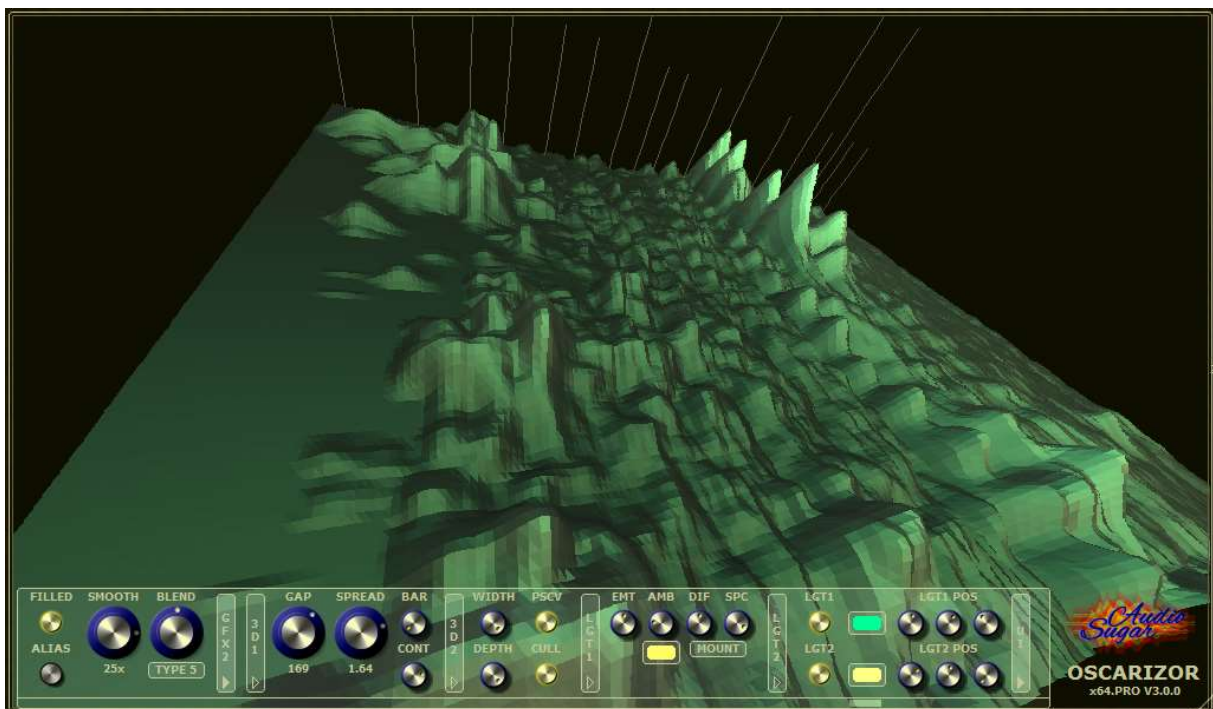# OSCARIZOR

2D / 3D Full Featured Parametric Multi Analyzer

Manual

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Contents

Features

- **2D / 3D full featured parametric multi analyzer**
- **Multi channel waterfall spectrum analyzer with mountains, bars, cylinder and tube models**
- **Parallel waveform & spectrum comparison using side-chaining and send/receive channels**
- **DAW host synchronization, initial autosync to receives & resync to receives button**
- **Automatic instrument tuner with FFT size and function memory**
- **Multi channel correlation & gonio meter**
- **DB-scale- and hideable RMS, peak & peak hold meter**
- **FFT size, window (7 functions) & average controls**
- **Spectrum tilt/slope knob & Nyquist mode**
- **Nearly unlimited instances in your DAW projects**
- **255 channels to send/receive waveforms and spectrums to/from other instances**
- **10 channels simultaneous view**
- **Channel naming with propagation to receiving channels**
- **Parallel and overlay view modes**
- **Combined 2D / 3D views Osc/Spectrum or Osc/Spectrum/Gonio meter**
- **Stereo, mixed mono (avg/max) & M/S (mid/side) view**
- **Filled/lined waveforms using blending, blending types, smoothing and antialiasing**
- **360 degrees three axis 3D rotation, free positioning and zooming**
- **Two independent 3D light sources with extended customization**
- **Custom UI & waveform coloration**
- **DB and amplitude view**
- **Absolute view for better analyzation**
- **Beat and measure display adjustment**
- **Reset / Bypass / Freeze / Freeze all (global freeze) buttons**
- **Signal modifying gain, phase switch, L/R swap and mono controls**
- **Sine test tone generator**
- **Exact mouse wheel zoom in/out**
- **Free positioning, scaling & dragging**
- **Multipanel UI control with all-in-one-mode, menu splitter & control scrolling**
- **Freely resizeable GUI from very small to enormously large (Ultra-HD, 5K Retina)**
- **Full window and control hover mode**
- **Preset Manager, quick save/load presets & A/B Comparison**
- **Flexible FFT formants csv file output**
- **SA 3D Engine 2.0: Highly optimized and customizable 3D renderer**
- **No dongle required (except AAX), zero latency and low CPU usage (except 3D)**
- **Supports x64 Windows 10 - 11 VST® 2/3, AAX (ProTools Native)**
- **Supports x64 macOS 10.11 – 12 VST® 2/3, AU, AAX (ProTools Native)**

- **Supports 16-32 bits sample resolution @ 44.1−192 kHz sample rate**
- **System requirements: Minimal 2 GB RAM & C2D 2.66 Ghz, 4 GB RAM & i5 and better recommended for multi channel usage and 3D functions**

Application areas

- **Detailed spectrum and waterfall analyzation in mixing and mastering**
- **Averaged spectrum comparison of received channels (e.g. reference tracks)**
- **Spectrum interference visualization (lightens parts with most activity)**
- **Stereo field, mid/side & correlation analyzation**
- **Compression tunings**
- **Limiting fine-adjustments**
- **Envelope shaping analyzations**
- **Transient control**
- **Ducking**
- **Leveling / metering**
- **…**

Free version limitations

The free version is limited (e.g. no 3D, no sync, no multi channel support, fewer controls, no instrument tuner, no FFT customization, no combined view).

Software installation

Mac

Mount and open .dmg and drag the desired package and the manual to the right folder.

Windows

Run the installer and follow the steps. Your DAW host software should find the plugin automatically or let the host rescan your plugins.

License installation

The plug-in searches automatically for the license file at the program start. The license that you will receive when you purchase the Pro version has to be installed to one of the following directories of your system drive(!).

Mac

/Library/Audio/Plug-Ins/VST

/Library/Audio/Plug-Ins/VST3

/Library/Audio/Plug-Ins/Components

/Library/Application Support/Avid/Audio/Plug-Ins

Windows:

The first item is the environment variable (if set on your system). Please remember that 32 bit executables just see 32 bit folders (X86).

PROGRAMFILES → Subfolder Oscarizor

PROGRAMFILES(X86) → Subfolder Oscarizor

VST_PATH

VST_32_PATH

VST_64_PATH

VST3_PATH

VST3_32_PATH

VST3_64_PATH

PROGRAMFILES → Subfolder Vstplugins

PROGRAMFILES(X86) → Subfolder Vstplugins

PROGRAMFILES → Subfolder Steinberg\Vstplugins

PROGRAMFILES(X86) → Subfolder Steinberg\Vstplugins

COMMONPROGRAMFILES → Subfolder VST3

COMMONPROGRAMFILES(X86) → Subfolder VST3

COMMONPROGRAMFILES → Subfolder Avid\Audio\Plug-Ins

Example:

If your System drive is C and you didn't move your Program Files folder to an other location than the standard folder, then one possible path would be: C:\Program Files\Steinberg\VstPlugins

Mouse Handling

Mouse handling in 2D

In the waveform or spectrum display use your mouse wheel to zoom exactly in/out the display at the current mouse position. Double left click to zoom completely into the waveform / spectrum. The right mouse button + mouse dragging moves the display to the right and left. Left mouse button + mouse dragging marks an area and automatically zooms this area in.

Mouse handling in 3D

In the waveform or spectrum display use your mouse wheel to zoom exactly in/out the display. Double left click to reset the axis rotation and zoom position to the default values. The right mouse button + mouse dragging rotates around the X and Y axis. Holding additional down the STRG / CMD key rotates around the Z axis. Left mouse button + mouse dragging moves the 3D object.

Right mouse click on parameters shows the popup menu from the parameter/host or enables direct value input (depending on parameter).

Keyboard shortcuts

Oscarizor Pro comes with a bunch of keyboard shortcuts that will optimize your workflow and visualizations. Is is necessary that your DAW reports the keyboard inputs to the plug-in, some DAWs don't do this or at least have an option to activate it. Some DAWs implement a buggy plug-in format keyboard handling.

ESC	Closes the dialog under the mouse pointer (e.g. preset manager)
Enter	Accepts the choosen dialog option and closes the dialog (e.g. color dialog)
A	Turns the all in one mode on/off
D	Changes the display mode (the same as a right mouse click at the small resizing triangle)
F	Toggles the filled/unfilled mode
G	Deactivates/activates the two display grids
H	Turns the tool tip help off/on
M	Hides/shows the RMS meter
N	Turns the nyquist mode on/off
O	Activates/deactivates the correlation meter(s)
P	Activates/deactivates the parallel mode
T	Turns the two channel mode on/off
X	Solos/unsolos the channel under the mouse pointer
Z	Freezes/unfreezes all
Left	Moves the control display to the left in all in one mode
Right	Moves the control display to the right in all in one mode
1-4	Select the panel number (not all in one mode) or moves the scroll bar to the chosen controls (1=CTRL, 2=FFT/TOOLS, 3=GFX, 4=SEND/RECEIVES)

About synchronization

Oscarizor has many possibilities to sync the display or instance to the host or to received channels. However sometimes it's not self-explaining what you have exactly to do to reach your goal. Here are some common examples how to use Oscarizor in terms of synchronization:

Sync your instance to a defined position in your DAW

- Stop your DAW playback.
- Set the DAW playback cursor to the position where to sync to.
- Activate the „SYNC H" button in Oscarizor (the moving line in the oscilloscope stops).
- Press the „SET POS" button in Oscarizor.
- Oscarizor is now synced to the host position, you can start playback now.

Hint: *Remember that you set the position and activate synchronization just for the current Oscarizor instance(!). If you receive others channels from other tracks you could also sync the*

other instances to the same position. Otherwise the received channels could be out of sync in this case.

Another hint*: Some DAW softwares doesn't report the cursor position correctly to audio plug-ins when the playback is stopped. A workaround is to set the position when the playback is paused or running.*

Sending & receiving channels and how to sync to them

- Insert Oscarizor instances at every channel from where you want to send signals and one instance at a channel where you want to receive the channels.
- At the channels panel choose at every sending instance a different „SEND" channel number between 1 and 255.
- In the receiving instance choose the same channel numbers at different „RCV x" columns. You should now see the different channels.
- Optionally choose channel names and colors. Check that the „S" (solo) and „H" (hide) buttons are not set.
- Initially the channels are in-sync.

Hint*: Some circumstances could cause that the channels or some of them are out of sync. For example: if you freeze one channel the other channels are not frozen and the sync offset in your receiving channel is no longer correct and the channels are out of sync. To repair this just press the „SYNC R" button. You could also use „FRZ A" (freeze all) to freeze all channels and analyze the channels in great detail without trouble.*

Another hint*: The synchronization just saves the display offset. The analyzation length („OSC SIZE" control at the „MAIN" panel) must be the same for all instances. Otherwise the display is out of sync after one oscilloscope turnaround because the offset isn't correct anymore – and that is also valid for the other analyzers because all of them are referencing to the same audio buffer offset.*

User Interface
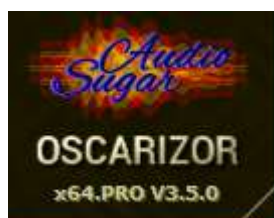
Questionmark
Shows this help file (if it is installed correctly).
Display resolution width
Direct input the display width.
Display resolution height
Direct input the display height.
Bottom right window edge

Freely resize the window dimensions. Right mouse button switches between default, <u>control hover</u> and <u>full window</u> mode.

Hint: Some DAW hosts or some versions of them have problems resizing plugin windows correctly. Results could be cut window edges or a closed window. A workaround is to just close (not remove) the plugin and reopen it.

PRO VERSION - LICENSED TO: Sugar Audio - Single User License

Hint: When you move the mouse pointer over the license information line, the line changes to an information line containing information about the current host tempo, run & loop state, sample rate, samples per beat and host sync position(!).

Tempo/Init:120/120 P:-1 PPQ:-1.000000 Cyc:-1,-1 Run:0 Loop:0 Last:-1 Num:0 SR:44100 SB:22050 SP:-1

Vertical top position (Fader left top)
Sets the vertical top position of the view.
Vertical bottom position (Fader left bottom)
Sets the vertical bottom position of the view.

HORIZONTAL POSITION   HORIZONTAL ZOOM

Oscilloscope horizontal position (Fader bottom left)
This is the horizontal position in the analyzation time span of the waveform. Also use the right mouse button at the waveform display to move the display.
Oscilloscope horizontal zoom (Fader bottom right)
Zooms horizontally into the waveform. Use right mouse button to choose from beat and measure constants. Also use mouse wheel at the waveform display to zoom.

LEFT POSITION   RIGHT POSITION

Spectrum horizontal left position
This is the horizontal left position in the spectrum. Also use the right mouse button at the spectrum display to move the display.
Spectrum horizontal right position
This is the horizontal right position in the spectrum.

ZOOM

Gonio meter zoom
Zooms into the gonio meter signal.

Presets control panel

Presets
Opens/closes the preset manager.

Arrows / preset name

Previous slot	→	Navigates to the previous slot.
Previous preset	→	Navigates to the previous preset of the slot.
Preset name	→	1.character F = factory preset / U = user preset
		2.character = slot from A to Z
		3.character = preset of slot from A to Z
Next preset	→	Navigates to the next preset of the slot.
Next slot	→	Navigates to the next slot.

A/B comparison
Compares the last two quickly loaded presets from A-H.

Quickly load/save preset (A-H)
Loads this global quick preset. Long holding the left mouse button down for 2 seconds saves the current settings to this global quick preset.

Main panel

Function
Choose the analyzation function you want to use (oscilloscope, spectrum analyzer, waterfall,

gonio meter or one of the combined views).

AIO (all in one)
All controls are dynamically muxed into one scrollable panel (depending on the current display width).

3D
Turns the 3d visualization mode on/off.

Hint: Vertical menu bars - by clicking on a vertical menu bar (e.g. CTRL) with the left mouse button, the associated controls will be hidden.

Bypass
Bypasses the complete analyzation, processing and user interface.

Freeze
Freezes just the real time analyzation. The user interface stays fully functional.

Reset

Resets and clears the display.

Freeze all / Global freeze

Freezes all instances of Oscarizor. The text "Freeze All" will be shown in the analyzation window to remind you that everything has been frozen by the user.

Sync H (host synchronization)

Turns the host synchronization on/off.

Set sync position

Syncs the beginning of the analyzation to the current position of the host controller (if present).

Sync R (sync to receives)

Syncs the display offset of all receives to the position of the current instance of Oscarizor.

M/S (mid/side)

Turns two channels on/off in combination with mid/side visualization.

L/R (stereo mode)

Displays two channels (L/R) of all displayed signals instead of one mixed mono channel.

Parallel

Shows all active channels in parallel mode instead of showing them in overlay mode.

Avg Sum

Turns the much quicker average sum method on/off used for the sum calculation of the spectrum analyzer and oscilloscope mono mix.

DB (decibel mode)

Displays the waveforms in decibel mode from 0 to -54 dB instead of displaying it in amplitude mode.

Abs (absolute display mode)

Shows the waveforms in absolute mode. Negative waveform parts are transcoded to positive parts.

Oscilloscope analyzation resolution size

Choose the time span for the analyzation in measures, beats or seconds with the knob or the right mouse button.

Hint: *The highest selectable time span is 30 seconds but is less at higher sample rates than 44 kHz.*

Channels panel

Send channel

Choose the channel where to send the incoming signal to. Use an other instance of Oscarizor to receive and compare this sent signal.

Receive channel

Choose the channel from where to receive a sent signal and compare it with the incoming signal. Use an other instance of Oscarizor to send a signal. Channels with '*' are used channels.
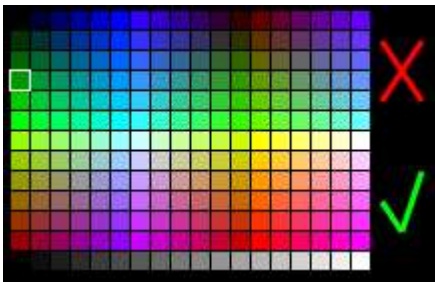
Channel name

Name of the channel. Freely type in a channel name.

Hint: *Sent channel names are automatically propagated to receiving instances as long as you don't use a custom channel name in the receiving instance (the name has to be blank in the receiving channel)..*

Signal color

Choose the color of the incoming signal waveform with the mouse button.

Left mouse button click and drag mouse to choose a color. Double click left mouse button or choose the green check to accept the color. Right mouse button click or choose the red cross to decline the color.

Hint: *Sent channel colors are automatically propagated to receiving instances as long as you don't use a custom channel color in the receiving instance (the color has to be black in the receiving channel).*

Side chain color

Choose the color of the side chained signal waveform with the mouse button.

Receive color

Choose the color of the received signal waveform with the mouse button.

S (solo signal)

Turns solo on for this signal and turns off all signals that are not solo (the outgoing signal isn't modified).

H (hide signal)

Hides this signal.

Tools panel

FFT window function

Choose from 7 different FFT window function.

Hint: *Please visit the excellent articles about window functions at wikipedia if you don't know what window functions are or to evaluate which window function is good for your needs.*

FFT size

Adjust the window size of the FFT function between 128 and 65536. Higher values are more detailed but need more CPU time.

FFT average

Controls the average time of the FFT/spectrum analyzer.

Tilt / slope

Spectrum weightning from -6 to +6 dB for a better visualization.

FFT log on/off (LOG)

Turns the FFT semicolon separated csv file logging on/off (frequency/normalized amplitude pairs) and uses the chosen treshold (dB), size (csv pairs) and range (Hz) with a rate of ~20 lines per second. The output directory is \AppData\Roaming (Win) or /Library (Mac) and then /SugarAudio/Oscarizor/Logs with the file name format FFTLog_YYYYMMTT_HHMMSS.

Hint: The frequency detection algorithm considers the FFT average and tilt slope settings!

Next hint: In Windows the \AppData\ folder is hidden by default in the explorer (like many other entries) . So you have to let Windows Explorer show hidden entries to you. Please search the internet for „explorer show hidden files" to find a manual how to do this, the way depends on the windows version you have.

Another hint: Beware of logging too long and too much of data, this will create big files and could fill up your data space.

FFT log treshold (dB) (TRESH)

The treshold in dB. Frequencies with a lower amplitude of the threshold will be excluded from the output to the log file.

FFT log size (MAXNF)

The maximum number of frequencies per line that will be written to the output log file.

FFT log range (Hz) (RANGE)

The range in Hz around a detected formant frequency. Other frequencies in this range will be excluded from the output to the log file.

Correlation Meter

Turns the correlation meter on/off. The red zone means that something in the signal is out of phase and should be corrected to avoid phase cancellations. The blue zone means that the L/R channels are in phase with a frequency boost. The middle means that no problems are detected.

Instrument tuner

Activates the built-in instrument tuner. The FFT size will be automatically raised to at least 32768 and the spectrum analyzer will be activated. These settings are restored when you deactivate the tuner.
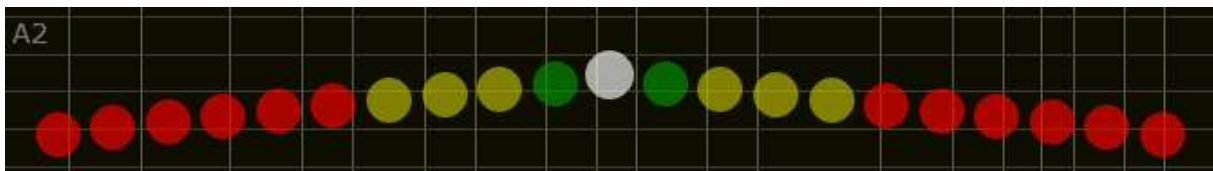
At the top left the current recognized note is displayed. The nearer the lightened dot is in the middle of the display, the more the note matches to the input.

Gen (sine generation)

Generates a sine wave and adds it to the incoming signal. The outgoing signal is modified.

Nyquist mode

The spectrum analyzer high frequency will be set up to nyquist frequency = half sample rate.

Frequency (frequency in hertz)

This is the hertz number of the generated sine signal.

RMS meter

Shows/hides the RMS meter.

RMS top dB

Sets the top dB position of the RMS meter.

RMS dB size

Sets the dB size of the RMS meter.

Gain (gain on/off)

Turns the gain adjustment on/off.

Swap L/R

Swaps the left and right channel. The outgoing signal is modified.

Gain level

Applies a gain adjustment to the incoming signal. The outgoing signal is modified.

Phase switch

Switches the phase of the incoming signal. The outgoing signal is modified.

Mono mode

Switches the incoming signal (not the display) to mono mode. The outgoing signal is modified.

Gfx Panel

Filled

Fills the waveforms with a solid pattern considering blending type and amount (in 2D mode).

Alias (antialias)

Applies an antialias Filter to the drawing of the waveforms display.

Smooth (smoothing factor)

Smoothes the waveform display by applying a smoothing algorithm for better visualization. The signal itself isn't modified.

Blend (blending)

This is the amount of waveform display blending for better visualization, adjust it to your needs (2D mode only).

Blend type

Choose from 5 different types of graphical blending types (2D) or triangle fill type (3D) to optimize the visualization.

In 3D waterfall mode the blend type has special functions:

Type 1) Signal parts that are at zero level of the display will be hidden & the front/back of the model is open.

Type 2) Front/back is solid.

Type 3) The front has an additional contour an the top.

Type 4) Zero level signal parts are solid.

Type 5) An additional contour is drawn at the bottom of the front.

3D link

Links changes in rotation, positioning and zooming for the spectrum analyzer and the oscilloscope in the 3D mode.

Contour Z position

Turns a near Z-coordinate mode on/off for waveform contours in 3D mode. Contours of waveforms far away shine through nearer waveforms.

Grid at the back

Turns the grid at the back on/off (or the first grid in 2D mode).

Grid at the bottom

Turns the grid at the bottom on/off (or the second grid in 2D mode).

Channel gap

Sets the Z-coordinate gap between multiple waveforms in the 3D mode.

Gfx spreading

Sets the horizontal display spreading (width) in 3D mode.

Bar width

Sets the bar width of the filled waveforms in the 3D mode (minimum = solid light, maximum = solid dark).

Contour

Sets the waveform contour intensity in the 3D mode.

Gfx resolution width

Sets the graphic resolution width for the waterfall 3D model (frequency domain). High values could have an impact to the system performance.

Gfx resolution depth

Sets the graphic resolution depth for the waterfall 3D model (time domain). High values could have an impact to the system performance.

Perspective

Turns the perspective correction on/off in 3D mode.

Backface culling

Turns the backface culling on/off to hide/show the triangles' backing sides of the 3D waterfall model.

3D Threading

Turns the multi threading CPU usage on to maximize the 3D performance.

Emissive light factor

Sets the model emissive light factor in 3D mode.

Ambient light factor

Sets the model ambient light factor in 3D mode.

Diffuse light factor

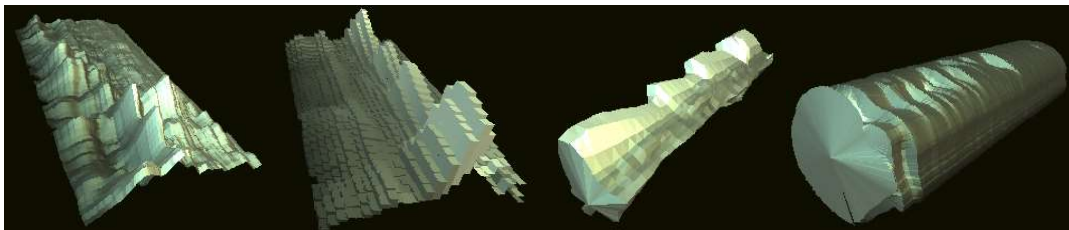Sets the lights diffuse factor shining on the model in 3D mode.

Specular light factor

Sets the lights specular factor reflecting from the model in 3D mode.

Ambient light color

Sets the ambient light color in 3D mode.

Waterfall art shape

Choose between mountains, bars, cylinder and tube display for the 3D waterfall mode.

Light 1

Turns the first light on/off in 3D mode.

Light 1 color

Choose the color of the first light in 3D mode.

Light 1 position

Sets the X, Y and Z coordinates of the first light in 3D mode. A small triangle will appear if the light is inside your view.

Light 2

Turns the second light on/off in 3D mode.

Light 2 color

Choose the color of the second light in 3D mode.

Light 2 position

Sets the X, Y and Z coordinates of the second light in 3D mode. A small triangle will appear if the light is inside your view.

Main RGB

Sets the red, green and blue color values of the main text elements.

Secondary RGB

Sets the red, green and blue color values of control elements and the secondary background.

View RGB

Sets the red, green and blue color values of the analyzation view elements.

Background RGB

Sets the red, green and blue color values of the analyzation view background.

Preset system

Oscarizor is delivered with some common presets for a good starting point of your work. You have the options to save your own presets with the preset system or with the quick save presets. The presets are system independent (Mac and Windows). The presets are stored at the following locations and can be freely copied/renamed (within the preset naming conventions):

For Windows: \Users\<youruser>\AppData\Roaming\SugarAudio\Oscarizor\Presets
For Mac: ~/Library/Application Support/SugarAudio/Oscarizor/Presets

Naming conventions for the presets

1.character F = factory preset / U = user preset

2.character = slot from A to Z

3.character = preset of slot from A to Z

The extension „.slo" is a slot file (without presets, description only) and „.pre" is a preset file.

User / factory presets

Switches between the user defined and developer delivered presets.

UI Lock

Locks UI relevant settings and protects them against overwriting when loading presets.

Slots

These items are the 26 available slots from A to Z.

Presets

These items are the 26 available presets within the selected slot.

Description boxes

The text describes the slots and presets.

Delete slot

Deletes the current slot with all of its presets.

Load preset

Loads the selected preset.

Save preset

Saves and overwrites the current preset to the selected slot and preset.

Delete Preset

Deletes the selected preset.

About (default) presets

Oscarizor has a factory and custom preset system. However, most of the modern DAWs have a built-in and plug-in independent preset system by themselves and in most cases you can also define a default preset with you favourite plug-in settings.

Hint: *So please check the manual of your DAW software.*

Performance guide

Indeed Oscarizor and the SA 3D engine are highly optimized and many hours have been spent in making it as quick as possible. But at a certain point you will maybe reach your system limits especially if you have an older system with little RAM and slower CPU. However here are some hints how you can reduce CPU and memory usage of the plug-in if you push your system to the limits.

- Don't use and delete unneeded instances of the plug-in
- Use the plug-in on buses instead of using it on every track
- Bypass unneeded instances by using the built-in Bypass button
- Use smaller plug-in window resolutions
- Reduce the usage of high FFT sizes, smoothing rates and blending types
- Reduce the usage of the 3D mode
- Use the 3D threading mode
- Reduce the depth and/or width of the 3D waterfall model
- Use backface culling and low blend types for the 3D waterfall model
- Turn one or both 3D lights off
- Deactivate the filled and antialias mode
- Use the average sum mode
- Use smaller OSC sizes
- Reduce the number of receives or hide them
- Use the mono view instead of L/R or M/S view
- Use a single analyzation window instead of using a combined view
- Turn the instrument tuner and correlation meter off when you don't need them
- Close the plug-in UI if you don't need it
- Buy better hardware :-) especially with better CPU and more RAM

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