

ACUSTICA AUDIO

SUNRAY



ACUSTICA

1. INTRODUCTION

Thank you for purchasing Sunray. To get the most out of your new plugin suite, please take the time to read this user manual carefully.

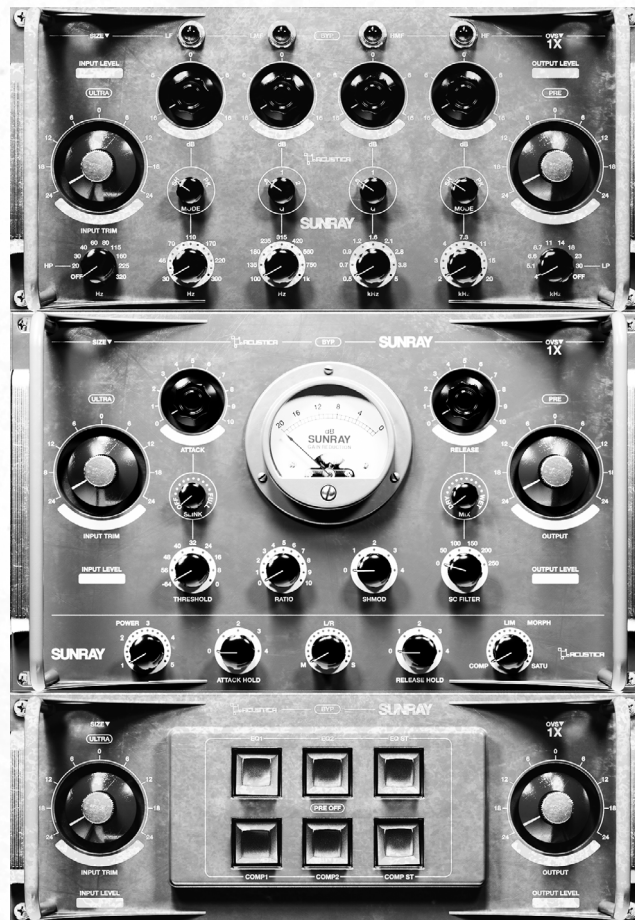
1.1. OVERVIEW

Sunray is a brand new suite of Acqua plugins (available in VST, VST3, AAX, and AU formats) that faithfully recreates some exceptional units with a vintage styling, but a modern sound, handcrafted in the USA by a famous boutique manufacturer of high quality, professional audio gear mainly based on vacuum tube technology, catering to the recording, post-production, broadcast, and live sound industries.

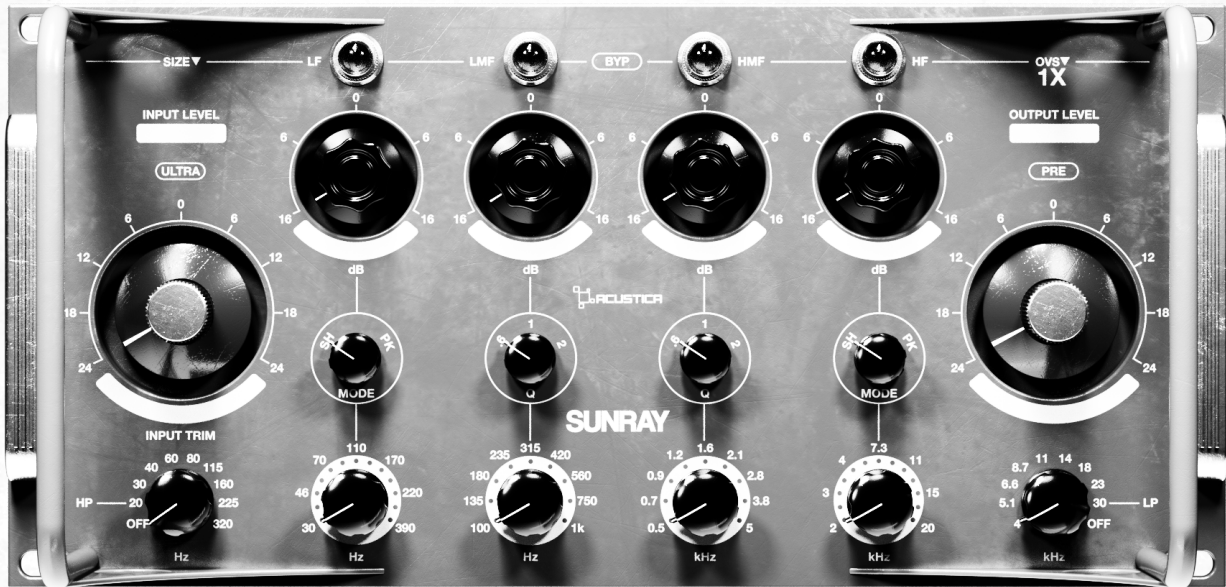
1.2. WHAT YOU GET

The Sunray plugin suite includes:

- Sunray EQ: A Class A solid-state 4-band parametric equalizer featuring Low and High shelving/peaking, Low and High mid frequency bands consisting of bell shaped filters with an adjustable Q factor (ranging from 0.6 to 2), each EQ band offers up to 16 dB of boost or cut and continuous frequency controls. Plus, added High and Lowpass filters (with 12 dB/octave slope) and an exceptional pre-amp stage for superior audio performance.
- Sunray Comp: A tube-based compressor/limiter with its pre-amp stage.
- Sunray Pre: A pre-amp hybrid section encompassing 2 stereo and 4 mono pre-amps for a total of 6 emulations.



2. SUNRAY SUITE



2.1. SUNRAY EQ

The Sunray EQ accurately emulates the extraordinary sound of a rare Class A solid state Equalizer including its microphone preamps, as well as the two high/low-pass filters. This gear came out in the late 1990s as result of a collaboration between a renowned American company and one of the greatest audio Pro gurus.

It delivers flawlessly pristine analog parametric equalization with an incredibly smooth sound when boosting high frequencies.

This smoothness evokes the characteristics of vintage parametric EQs, (to draw a parallel with Acustica's product line, we could refer to our Scarlet suite), often attributed to the use of output transformers rather than IC chips. Additionally, this EQ possesses a distinct and unique character. When combined with the exceptional sound of the 'classic' preamplifiers this equalizer offers versatility, precision, and an unmatched flexibility.

The Sunray EQ features a discrete class A transformer-coupled four-band parametric EQ. It was designed in collaboration with a renowned and pioneering designer of professional audio recording equipment, this legendary figure in the industry, personally designed the Class A, discrete-transistor analog microphone preamp, coupling sections, output driver stages, and English-made transformers. He also specified the performance parameters and the frequencies of the equalizer section.

Furthermore, it is worth noting that the original equalization is digitally controlled, providing an intuitive and user-friendly interface. We have strived to maintain this ease of use in our plugin version, equipping the suite with a visually distinctive look while ensuring easy and immediate understanding, thus delivering a seamless and intuitive user experience.



2.2. SUNRAY COMP

The Sunray Comp is a mono version of an iconic hybrid design compressor/limiter. It combines hand-selected vacuum tubes with high-reliability 990 op-amps in a transformerless signal path, in short it merges the most desirable sonic characteristics of valves with the increased reliability of solid-state devices resulting in an incredibly clean and precise sound with subtle overtones and the warm characteristic of vacuum-tube technology. It offers exceptional versatility and imparts a musical quality that has shaped the sound of countless albums and concerts over decades.

The sound of this compressor offers a harmonious combination of gentle tube warmth and delicate harmonic tones, while preserving a bright, clear, and modern character.

One of its notable features is its ability to deliver exceptionally fast attack and release times, making it particularly well-suited for vocals and bass.

Its distinctive tonality and compression behavior set it apart from the rest. Even when pushed significantly, the Sunray Comp's compression remains subtle; suitable attack and release settings can always be found to prevent excessive pumping. Similarly, when used to apply a slight compression of just a few decibels, the resulting sound is truly sublime: wonderfully warm, full, and exquisitely controlled.

Given this premise, it is logical to expect a rather controlled and not excessively prominent saturation. Its 'hybrid' nature has a significant impact on saturation, resulting in a different character compared to many sampled units thus far.



2.3. SUNRAY PRE

The Sunray Pre encompasses all the pre-amplification emulations found in the suite into one comprehensive plugin. It is a 'hybrid' plugin, allowing users to select between the circuitry of the Sunray EQ (Class A, discrete and solid-state, plus transformer-coupled designs) or the Sunray COMP (FET and Tube).

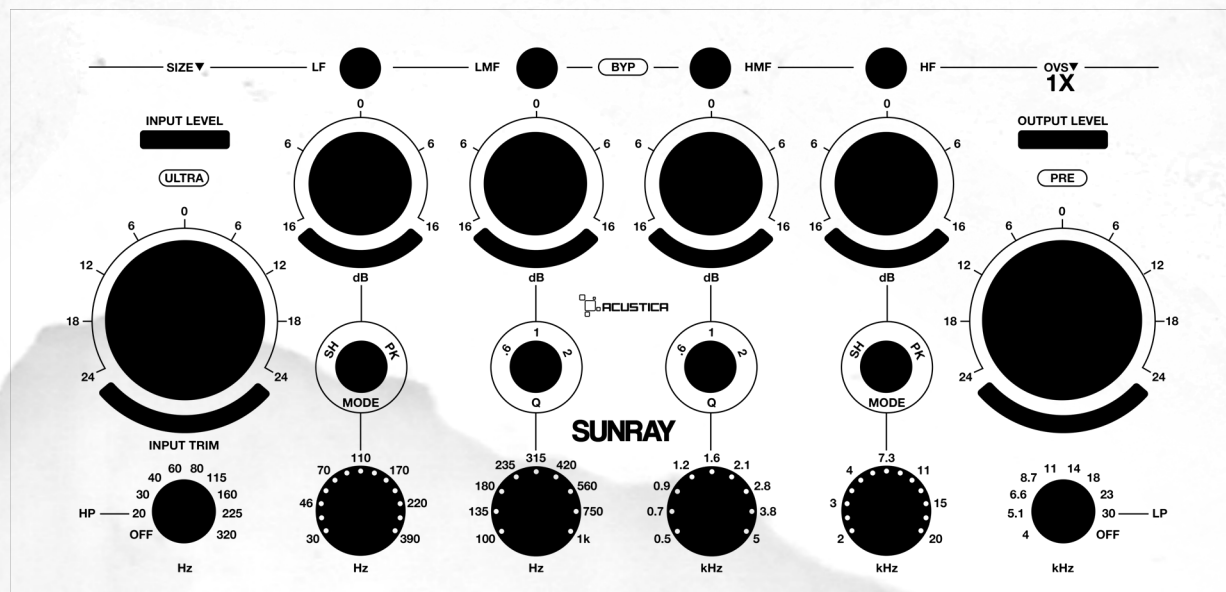
Moreover, users can choose between the original Stereo model or the corresponding Mono preamps derived from them, for a total of 6 different preamps based on our ultra-performing Hyper2 technology.

3. OPERATION

The Sunray suite includes 3 different plug-ins: a mono 4-Band Parametric EQ, a hybrid mono dynamic processor, and a preamp module.

NOTE: Please keep in mind that for each plug-in in the Sunray suite we recommend that you calibrate your input levels to: $-18\text{dBFS} = 0\text{dBu}$. In this way you will avoid any unwanted distortion or unpredictable behavior due to excessive input levels.

Below you will find the explanation of each plugin included in this powerful suite.



3.1. SUNRAY EQ CONTROLS

BYPASS: Bypasses the whole plugin.

INPUT TRIM / SATURATOR: A one-knob internal gain structure control linking the input and output gain stages with an inverse law. The control sets the input level from -24dB to $+24\text{dB}$, and it is used to adjust the plugin's internal level. It is possible to increase the harmonic saturation with this Input trim knob.

Note: when the preamp stage is bypassed (OFF), the 'Input Trim' mode has no effect.

This knob behaves in a different way if the ULTRA button is pressed, which sets the amount of distortion of the preamp. The ULTRA button shapes the preamplifier stage more accurately when it passes the breakpoint to better simulate saturation.

Be aware, it can give some analog character to an instrument, by adding warmth, or it can literally 'punish' the signal with extreme saturation, becoming very aggressive (if you overshoot the breakpoint); use it wisely! If the ULTRA button is not activated, the knob acts like a traditional Acustica preamplifier Input Trim, an internal one-knob gain structure control that connects the input and output gain stages with an inverse law.

OFF (PREAMP): Bypasses the preamp.

PRE: This button allow you to activate the pre-amp stage of the plugin. The harmonic distortion levels of the preamps included in this plugin depend on the Input Trim control. NOTE: when the pre-amp stage is bypassed, the 'Input Trim' mode has no effect on the plug-in.

ULTRA: Pressing this button shapes the preamplifier stage (Input Trim) more accurately when it passes the breakpoint to better simulate preamp saturation.

OUTPUT: Adjusts the output volume. Range: -24dB to +24dB.

LF ACTIVATION BUTTON: Activates (Led On) the LF band of the plugin.

LMF ACTIVATION BUTTON: Activates (Led On) the LMF band of the plugin.

HMF ACTIVATION BUTTON: Activates (Led On) the HMF band of the plugin.

HF ACTIVATION BUTTON: Activates (Led On) the HF band of the plugin.

LF FREQUENCY control: Selects the frequency for the LF band's continuous filter - The low band peak/shelving ranges from 30 Hz to 300 Hz. The filter slope is fixed at 12 dB/octave.

LMF FREQUENCY control: Selects the frequency for the LMF band's continuous filter - The low mid band parametric ranges from 100 Hz to 1 kHz.

MID2 FREQUENCY control: Selects the frequency for the HMF band's continuous filter - The high mid band parametric ranges from 500 Hz to 5 kHz

HF FREQUENCY control: Selects the frequency for the HF band's continuous filter - The high band peak/shelving ranges from 2 kHz to 20 kHz. The filter slope is fixed at 12 dB/octave.

LF Cut/Boost gain control: Provides a continuously variable CUT/BOOST from -16dB to +16dB to the selected LOW frequency.

LMF Cut/Boost gain control: Provides a continuously variable CUT/BOOST from -16dB to +16dB to the selected LOW-MID frequency.

HMF Cut/Boost gain control: Provides a continuously variable CUT/BOOST from -16dB to +16dB to the selected HIGH-MID frequency.

HF Cut/Boost gain control: Provides a continuously variable CUT/BOOST from -16dB to +16dB to the selected HF frequency.

LF MODE control: For the Low band, peaking or shelving can be selected by using this knob. Turning all the way to the left the setting is shelving (SH), turning all the way to the right is peaking (PK).

HF MODE control: For the High band, peaking or shelving can be selected by using this knob. Turning all the way to the left the setting is shelving (SH), turning all the way to the right is peaking (PK).

LMF Q control: Low-mid band parametric peaking filter. Filter Q adjustment is accessed by turning this knob. The range of adjustment is 0.6 (1.6 octave) to 2.0 (0.5 octave).

HMF Q control: High-mid band parametric peaking filter. Filter Q adjustment is accessed by turning this knob. The range of adjustment is 0.6 (1.6 octave) to 2.0 (0.5 octave).

HPF control: The High Pass filter operates over a frequency range of 20Hz to 320Hz with a slope of 12dB/octave. The first knob step (OFF) bypasses the filter.

LPF control: The Low Pass filter operates over a frequency range of 4kHz to 30kHz with a slope of 12dB/octave. The first knob step (OFF) bypasses the filter.

INPUT & OUTPUT NUMERICAL LEVEL METERS: Numerical (Peak) meters show the input and output level of the plugin. Range: -24dB + 6dB.

SIZE: Adjust the whole plugin-GUI size. Choose between 3 magnifications (1x - 1.5x - 2x) from the top left SIZE dropdown menu. Once the desired size has been selected, the plugin must be removed and re-loaded in order to apply the new size.

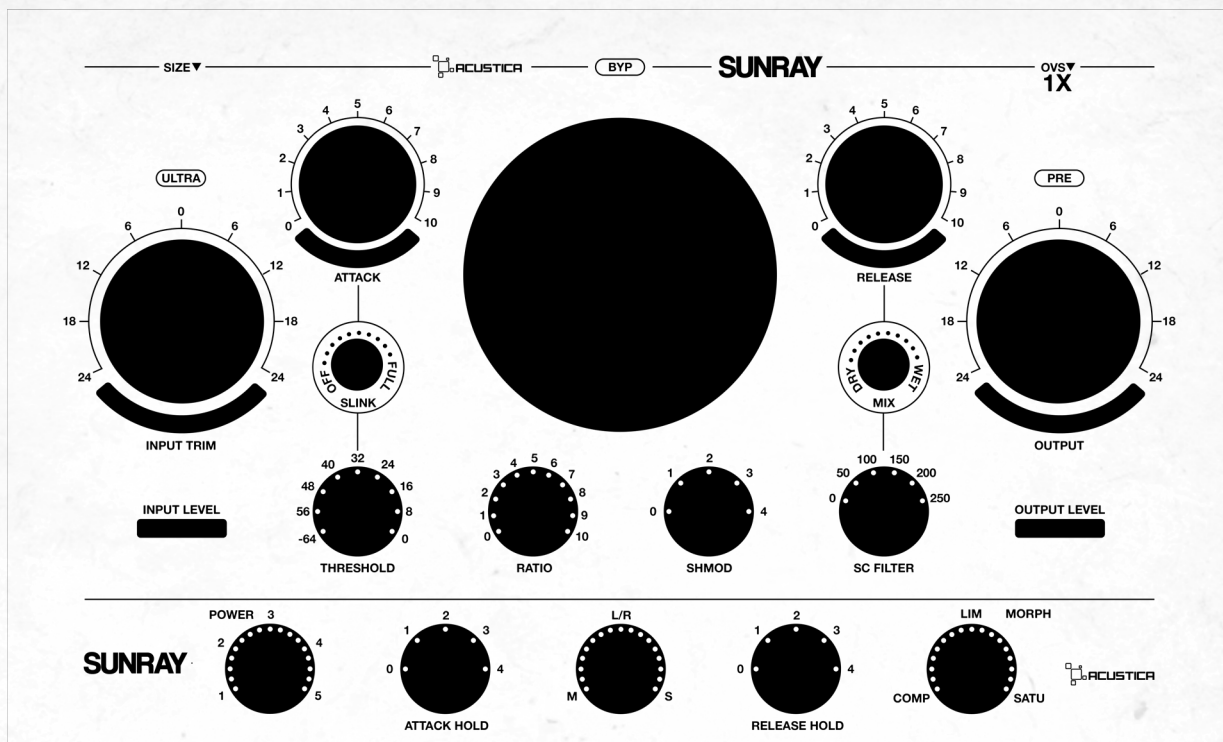
This action affects the currently selected plugin. New instances of the same plugin will open with this size. NOTE: 3D plugin versions have only 1x and 2x plugin-GUI size options.

OVERSAMPLING (OVS) MENU: This menu allows you to change the oversampling rate to improve the audio quality, increasing the sampling frequency of the plugin and minimizing aliasing artefacts:

- The 1x mode bypasses the oversampling functionality.

- The oversampling mode increases the sampling frequency of the saturator being processed by a fixed multiple of 2x, 4x, 8x, 16x.





3.2. SUNRAY COMP CONTROLS

BYPASS: Bypasses the whole plugin.

ATTACK: Sets the compressor's attack time, ranging from 1 mS (fast) to 100 mS (slow).

RELEASE: Sets the compressor's release time, ranging from 0.35 S (fast) to 10 S (slow).

THRESHOLD: Sets the threshold of the compressor (range: -64 dB to + 0 dB).

SC FILTER: This control sets the cut frequency of a very gentle 1-pole high-pass filter inserted in the side-chain path. Filters out the low frequencies which can affect the action of the compressor. Range: 50 -250 Hz. In the leftmost position (labeled '0'), the filter is bypassed.

RATIO: Sets the ratio of the compressor; Range: from 0 (1,1:1) to 10 (7:1).

THRESHOLD: Sets the threshold of the compressor (range: -64 dB to + 0 dB).

MIX: This controls the proportion between the original (dry) and 'effected' (wet) signal. In other words, it lets you balance the compressed with the uncompressed signal. Range: 0% to 100%.

OUTPUT: Adjusts the output volume. Range: -24dB to +24dB.

INPUT & OUTPUT NUMERICAL LEVEL METERS: Numerical (Peak) meters show the input and output level of the plugin. Range: -24dB + 6dB.

SIZE: Adjust the whole plugin-GUI size. Choose between 3 magnifications (1x - 1.5x - 2x) from the top left SIZE dropdown menu.

Once the desired size has been selected, the plugin must be removed and re-load in order to apply the new size. This action affects the currently selected plugin. New instances of the same plugin will open with this size. NOTE: 3D plugin versions have only 1x and 2x plugin-GUI size options.

OVERSAMPLING (OVS) MENU: This menu allows you to change the oversampling rate to improve the audio quality, increasing the sampling frequency of the plugin and minimizing aliasing artefacts:

- The 1x mode bypasses the oversampling functionality.
- The oversampling mode increases the sampling frequency of the saturator being processed by a fixed multiple of 2x, 4x 8x 16x.

MORPH: This implements an intuitive morphing control (MORPH) that allows each of the dynamic elements to be seamlessly transformed from a compressor, to a limiter, to a saturator while simultaneously handling the stereo-link intuitively.

This control allows for a continuous action of further transformation of the detector's attack and release curves. In the first half of the run, they transform the attack curves up to an attack time of zero length; in the second half, they bend the release curves, reaching a release time of zero length. Interestingly, the transformation of the attack and release curves always maintain the original proportions.

SHmod: This alters the shape of the attack envelope, allowing you to fine-tune the attack behavior and adapt it to any audio source. Position 2 gives the original attack time of the modeled compressor. Position 1 gives you the fastest setting.

Going from 1 down to 0, a lookahead function is enabled. The global range of the lookahead goes from 0 to 4 milliseconds. Values above 2 will slow down the attack time.

POWER: The power function allows you to change the general characteristics of the detector.

Power ranges from 1 to 5, where the value 1 corresponds to the typical PEAK-type detector.

The times written for attack and release are calculated on the PEAK mode and are derived from sampled curves from the real hardware.

HOLD ATTACK - HOLD RELEASE: These controls allow you to overcome any limitation and arrive at instantaneous compression.

In an envelope detector, the attack (attack) is the time required for the output of the circuit to reach the maximum value of the input signal after a sudden increase in its amplitude. On the other hand, the hold function forces the time required for the output of the circuit to maintain its value after a sudden increase in the amplitude of the input signal. The visible result is a tendency to preserve transients, avoiding compressing them if they are shorter than the HOLD time.

In the Sunray Comp, the time is also proportional to the current attack value. The HOLD function related to attack differs from that of release because it is dependent on the threshold value of the compressor (whereas in the case of release, it is independent): when the hold function is active, once the amplitude of the input signal exceeds the threshold, the output of the circuit will remain at its value for a predetermined period, regardless of further changes in the amplitude of the input signal.

So as a general rule, transients that exceeded the value set by the threshold and are shorter than the HOLD time are perfectly preserved.

Since the HOLD section creates a considerable effect, its presence (or absence) can drastically change the way transients are processed, similarly a slight change in release can create a completely different feel on transients. We decided to introduce in Sunray Comp a hold control for the release as well, increasing versatility and allowing you to have all the punch you want! Range: 0 / 100.

MID / LEFT-RIGHT / SIDE: This control allows you to choose different processing modes.

Details:

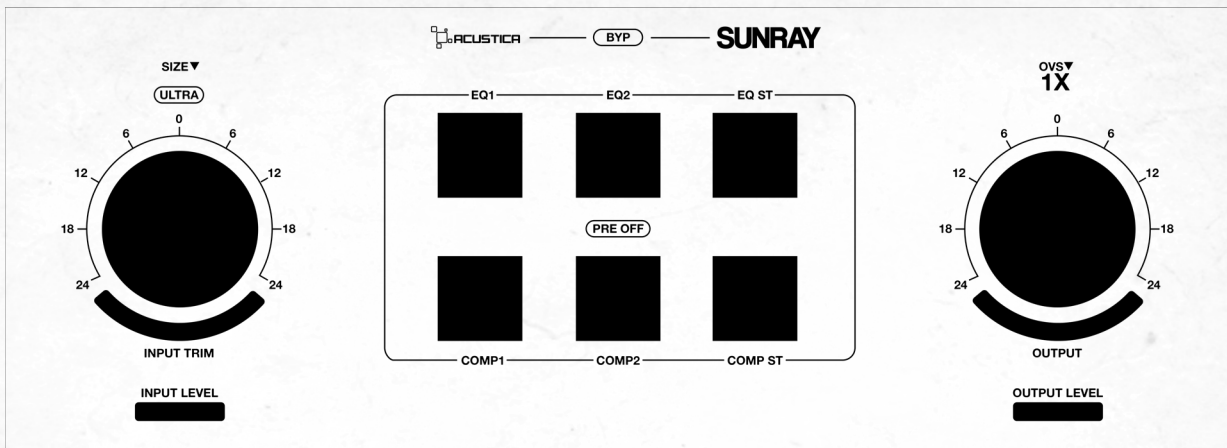
Left-Right: Left/Right processing is enabled by pressing the L-R button (the default processing mode).

Mid: MID processing is enabled by pressing the MID button, the dynamic control is applied to the center of your soundstage (Mid component).

Side: SIDE processing is enabled by pressing the SIDE button, the dynamic control is applied to the sides of your soundstage. (Side component).

GAIN REDUCTION METER: This meter displays the gain reduction level applied by the compressor. Range: -38dB to +0





3.3. SUNRAY PRE CONTROLS

INPUT TRIM / SATURATOR: A one-knob internal gain structure control linking the input and output gain stages with an inverse law. The control sets the input level from -24dB to +24dB, and it is used to adjust the plugin's internal level. It is possible to increase the harmonic saturation with this Input trim knob.

Note: when the preamp stage is bypassed (OFF), the 'Input Trim' mode has no effect. This knob behaves in different way if the ULTRA button is pressed. In this case this sets the amount of distortion of the preamp. The ULTRA button shapes the preamplifier stage more accurately when it passes the breakpoint to better simulate saturation.

Be aware, it can give some analog character to an instrument, by adding warmth, or it can literally 'punish' the signal with extreme saturation, becoming very aggressive (if you overshoot the breakpoint); use it wisely!

If the ULTRA button is not activated, the knob acts like a traditional Acustica preamplifier Input Trim, an internal one-knob gain structure control that connects the input and output gain stages with an inverse law.

OFF (PREAMP): Bypasses the preamp.

ULTRA: Pressing this button shapes the preamplifier stage (Input Trim) more accurately, when it passes the breakpoint to better simulate preamp saturation.

PRE-OFF: Bypasses the preamp.

PREAMPS BUTTONS: These buttons allow you to select from 6 different preamps. (2 Stereo and 4 Mic). As expected, each preamp is mutually exclusive; as a consequence, only one pre-amp emulation at a time can be activated. The harmonic distortion levels of the preamps included in this plugin depend on the Input Trim control. NOTE: when the pre-amp stage is bypassed, the 'Input Trim' mode has no effect on the plug-in.

Details:

EQ ST: Emulation of the stereo preamplifier of the Sunray EQ, featuring a Class A, discrete-transistor analog microphone preamp with unparalleled design and quality.

COMP ST: Emulation of the stereo preamplifier of the Sunray Comp, which is described as a 'hybrid' as it combines hand-selected vacuum tubes with high-reliability 990 op-amps in a transformerless signal path, resulting in an extremely clean yet rich sound with subtle overtones and warmth.

EQ 1: Emulation of the microphone pre-amplifier from the Sunray EQ, it's a MONO preamp derived from the left channel of the unit.

EQ 2: Emulation of the microphone pre-amplifier from the Sunray EQ, it's a MONO preamp derived from the right channel of the unit.

COMP 1: Emulation of the microphone preamplifier of the Sunray COMP, it's a MONO preamp derived from the left channel of the unit.

COMP 2: Emulation of the microphone preamplifier of the Sunray COMP, it's a MONO preamp derived from the right channel of the unit.

OUTPUT: Adjusts the output volume. Range: -24dB to +24dB.

INPUT & OUTPUT NUMERICAL LEVEL METERS: Numerical (Peak) meters show the input and output level of the plugin. Range: -24dB + 6dB.

SIZE: Adjust the whole plugin-GUI size. Choose between 3 magnifications (1x - 1.5x - 2x) from the top left SIZE dropdown menu.

Once the desired size has been selected, the plugin must be removed and re-load in order to apply the new size. This action affects the currently selected plugin. New instances of the same plugin will open with this size.

NOTE: 3D plugin versions have only 1x and 2x plugin-GUI size options.

OVERSAMPLING (OVS) MENU: This menu allows you to change the oversampling rate to improve the audio quality, increasing the sampling frequency of the plugin and minimizing aliasing artefacts:

- The 1x mode bypasses the oversampling functionality.
- The oversampling mode increases the sampling frequency of the saturator being processed by a fixed multiple of 2x, 4x 8x 16x.



3.5. WHAT IS A ZL PLUGIN?

Acustica plugins come in two versions: ZL (zero latency) and a regular version. While the ZL version does not introduce any latency to your system, the standard version does. This buffer varies in size for each plugin and helps reduce the CPU and system load of your computer significantly. We recommend that you use a ZL instance when tracking.

Basically, both plugin instances are identical, but the current Acqua engine can work either with or without an audio buffer.

The idea behind a ZL instance is to give you the option to run an Acqua Effect with minimal latency, which is helpful for tracking or direct monitoring.

3.6. HYPER TECHNOLOGY

Thanks to our new Hyper/Hyper2 technology, we can now deliver even more realistic and convincing compression, saturation, filters, and preamp signals in the digital domain by emulating the sound of analog recording equipment with lower CPU consumption and improved stability.

4. HOW TO DOWNLOAD, INSTALL AND AUTHORIZE YOUR PRODUCTS

Acustica Audio products can be downloaded, installed, and authorized using the Aquarius Desktop application.

The Aquarius Desktop application is a free standalone application that will manage every step in an automatic way without user intervention.

Download Aquarius Desktop Application
www.acustica-audio.com/pages/aquarius

4.1. HOW TO DOWNLOAD A PRODUCT IN AQUARIUS DESKTOP APPLICATION

To download a product using the Aquarius Desktop application go to the purchase page and select the product and format (VST2, VST3, AAX, AU) to install.

In case you can't find your product on the purchase page use the search page.

4.2. HOW TO INSTALL A PRODUCT IN AQUARIUS DESKTOP APPLICATION

The installation is done automatically by the Aquarius Desktop application after the download. As the Aquarius Desktop application creates a temporary file of the downloaded products, known as the stage area, at the moment you want to reinstall a product it will not be necessary to download it again.

4.3. HOW TO AUTHORIZE A PRODUCT IN AQUARIUS DESKTOP APPLICATION

The authorization is done automatically by the Aquarius Desktop application after the product installation. You can manage your authorizations using the Aquarius Web Service.

Click [HERE](#) or a complete installation user guide.

5. SYSTEM REQUIREMENTS

Modern computers are powerful enough to run many plugins at once. However, our technology requires more resources than algorithm-based software, so we recommend optimizing your system to work with high CPU loads and low audio latency.

Before starting the installation process, please confirm that your system meets the minimum system requirements to run the plugins please consult the following link: <https://app.box.com/v/AASYSTEMREQUIREMENTS>

6. CUSTOMER CARE

To contact Acustica Audio, always use the single point of contact, which is this help-desk portal: <https://acusticaudio.freshdesk.com/>

We do not provide official assistance via social networks, public forums, or email accounts. For troubleshooting and issue reporting, check the available solutions in the knowledge base.

7. COPYRIGHTS AND CREDITS

All names, product names, logos, and brands displayed on this document are the property of their respective owners. The content included in this manual, such as graphics, icons, images, is the exclusive property of Acusticaudio S.r.l. a socio unico or its suppliers and is protected by international copyright laws.

The information contained on our website may not be downloaded, modified, distributed, uploaded, or otherwise used without the express written consent of Acusticaudio S.r.l. a socio unico, Acustica Audio is a trademark of Acusticaudio S.r.l. a socio unico.

SUNRAY

ACUSTICA AUDIO 2023