



The Type III is the latest generation, fully professional Aural Exciter loaded with powerful new processing features and improved circuitry. The dual channel Type III adds thrilling new dimensions to *Aural Excitement*. Noise and distortion are virtually eliminated in the Type III circuitry, while the new special features now make enhancement possible while actually erasing noise from noisy sources.

NEW FEATURES

- ADJUSTABLE HARMONICS MIXING
- TWO MODES OF NOISE REDUCTION
- SPR™ SPECTRAL PHASE REFRACTOR
- SERVO BALANCED I/O ON XLR-TYPE CONNECTORS
- APHEX VCA 1001
- NULL FILL

STANDARD FEATURES

- OPERATES WITH I/O LEVELS FROM +8dBm TO -10dBm
- OPERATES BALANCED OR UNBALANCED AUTOMATICALLY
- ALL USER SETTINGS EXTERNALLY ACCESSED
- FULLY REGULATED POWER SUPPLY
- INTERNATIONAL POWER MAINS SELECTION
- RF FILTERED AC POWER INPUT
- DIRECT RELAY BYPASS
- SOLO FUNCTION
- REMOTE CONTROL OF RELAY BYPASS
- ALL SWITCH SETTINGS L.E.D. INDICATED
- STABLE, REPEATABLE SETTINGS
- EASY TO USE

APPLICATIONS

- RECORDING STUDIO TRACKING AND MIXDOWNS — ADDS AIR, SPARKLE AND PRESENCE TO VOICES AND MUSIC. IMPROVES IMAGING.
- SOUND REINFORCEMENT — ADDS CLARITY, HIGH FREQUENCY DISPERSION AND PENETRATION WITHOUT INCREASING CHANCE OF FEEDBACK
- SAMPLING — EXTENDS BANDWIDTH AND ADDS DETAIL
- FILM & VIDEO — RESTORES CLARITY AND INTELLIGIBILITY TO DIALOGUE TRACKS, SOUND EFFECTS AND MUSIC
- "ON AIR" BROADCASTING — INCREASES LOUDNESS, CLARITY AND PRESENCE WITHOUT DISTORTION OR OVERMODULATING
- AM BROADCASTING — PROVIDES THE CLARITY AND BRIGHTNESS OF FM
- FM BROADCASTING — RESTORES NATURALNESS AND OPENNESS NORMALLY LOST DUE TO PROCESSING

Aphex Aural Exciter® Type III

Model 250

The Aphex Aural Exciter Type III utilizes a patented audio process that will recreate and restore missing harmonics. These harmonics are musically and dynamically related to the original sound. When added, they restore *natural* brightness, clarity and presence, and can actually *extend* audio bandwidth. These harmonics are so low in level however, they add little power to the signal. Unlike an equalizer or other "brightness enhancers" which can only *boost* high frequencies, the Aural Exciter Type III *extends* the high frequencies. It is a single-ended process that can be applied at any point in an audio chain, and needs no decoding.

The Aural Exciter process consists of two audio paths. The main path and the process sidechain path. The main path transparently conveys the audio signal directly from the input stage to the output stage, maintaining unity gain with wide dynamic range. The sidechain path contains all of the Aural Exciter processing circuits and receives audio from the input stage.

A mixing circuit in the main path allows the sidechain output signal to be mixed with the main signal. The user adjusts the amount of "MIX" to set the strength of the effect.

Two Modes of Noise Reduction are provided with the Aural Exciter Type III, allowing it to provide enhancement without adding to the noise floor of reasonably noise free sources. It can also enhance the brightness, detail and clarity of seriously noisy audio sources while, at the same time, erasing much of the original noise.

Mode "A" operates as a linear sidechain expander with variable threshold. The expansion ratio of 2.5-to-1 permits the sidechain "MIX" to follow the signal level below threshold, so when the higher frequencies of the input drop below threshold, the "MIX" will drop at a proportional 2.5-to-1 ratio. Thus the original signal-to-noise is not affected even with a great deal of enhancement.

Mode "B" is a revolutionary new noise reduction technique which operates to actually "erase" source audio noise while the Type III enhances the signal. This allows you to restore brightness and intelligibility to noisy recorded tracks or other noisy sources and improve the signal-to-noise ratio!

Both modes are fast and easy to use, and effective in any application from live sound to broadcasting and recording.

The **"SPR" (Spectral Phase Refractor)** function of the Type III is a totally new concept in psychoacoustic enhancement which can produce some amazing results. Through the many steps of recording, duplicating, distributing and reproducing sound, the phase of the low frequency audio spectrum becomes delayed compared to mid and high frequencies. This is a natural and unavoidable effect which becomes worse with each generation.

When the bass frequencies become delayed in time compared to other sounds, the bass loses fullness and definition and seems to become less powerful even though there may be no actual loss of bass frequency response. The high end also loses definition, seeming to get duller.

Amplitude equalization at this point will not fully restore the clarity and bass power... indeed, it may worsen the condition causing clipping or overload distortion. The **"SPR"** corrects the bass delay anomaly to restore clarity and openness and significantly increases the apparent bass energy level without adding any amplitude equalization or "bass boost." The **"SPR"** function works harmoniously with the new Aural Exciter circuitry to give the Aural Exciter Type III amazing new capabilities.

The "Drive" control of previous Aural Exciters has been eliminated and **Adjustable Harmonics Mixing** of the exact harmonics level desired is now available making the Type III more flexible and easier to use.

Null Fill is a new and useful tuning adjustment introduced for the first time with the Aural Exciter Type III. The addition of NULL FILL to the PEAKING and TUNE controls gives the Type III more power and flexibility to enhance all types of audio sources. To understand how it works, it is necessary to understand a physical phenomenon called "*Phase Nulling*" which occurs with all Aural Exciters when the MIX control is adjusted to obtain high frequency enhancement.

There is a time delay associated with the *sidechain* signal which is an important part of the operating theory of the Aural Exciter. This time delay causes transient waveforms to be slightly "stretched" as the sidechain signal is added to the main audio path. The "stretched" transients are then perceived by the ear as more pronounced or "louder." The side effect of the time delay is a "dip" or "null" in the output equalization curve. The null can be a desirable characteristic because it compensates for the slight additional power added to the signal by the high frequency shelving boost. The null de-emphasizes the frequency range around the TUNE control setting, thus giving even greater emphasis to the higher frequencies.

There are times, however, when the *Phase Null* is unwanted. The NULL FILL control allows the user to "fill-in" the phase null to any desired amount, thus further improving *presence*.

Servo-Balanced Inputs and Outputs — Although more costly than conventional designs, servo-balancing offers many advantages. Servo-balanced input circuits absorb high common-mode voltages found in long cable runs without sacrificing headroom. Servo-balanced outputs are not only short-circuit proof, but can be used single-ended at any time without the usual 6 dB loss of conventional circuits. To use input or output single-ended (unbalanced) the user need only ground the unused pin. Inputs and outputs are fully RF protected. The unity gain I/O structure is normalized for both +4dBm (professional) and -10dBv (IHF) operating levels by switch selection from the rear panel.

Typical Applications

The Aural Exciter may be used in many ways for audio enhancement. Depending upon the requirements, either pre- or post-processing may be selected. Either source optimization or system optimization or a combination of both is possible. For example, a P.A. system may be greatly enhanced by using the Aural Exciter to increase the intelligibility of the loudspeakers, thus improving penetration of the sound around corners and in areas usually difficult to fill. In another case, the source may sound dull and hard to understand. The Aural Exciter will compensate for this deficiency by adding brightness and clarity to the sound more effectively than use of equalization alone.

The Aural Exciter may be used to "pre-process" recordings to anticipate the audio degradation in the medium or during subsequent reproduction. Much of the detail added by the Aural Exciter will survive filtering and distortion of the reproduction equipment, and provide a better quality audio playback. Audio and Video Cassette duplication are examples of this application. Broadcasting is another good example.

In the recording studio, post production suite or similar environment, post-processing of previously recorded sound tracks can restore lost vibrance and realism, even to the extent of saving dialog or sound effects which were thought to be unusable. Instruments and vocals can be made to stand out in the mix without substantially increasing the mix levels or using equalization.

Many electronic instruments are limited by their sampling rate (bandwidth) and word length (resolution), they can sound lifeless. The Aural Exciter actually extends bandwidth and adds details making synths, samplers and drum machines come alive.

Video and film audio are both bandwidth limited and compressed. The Type III is especially useful in creating the perception of higher frequencies and greater dynamics with pre-processing, thus bringing more presence and clarity to the final product.

Aural Exciter[®] Type III

Model 250

Specifications

VCA:	Aphex 1001
Frequency Response:	+0, -1dB 1Hz to 190kHz
THD:	.01% Max @ +27dBm I/O
IMD:	.01% Max @ +27dBm I/O
Max I/O Level:	15.5 VRMS (+27dBm Ref. 600 Ohms)
Nominal Gain:	0dB (With Output loaded by 600 Ohms)
Input Impedance:	19.5k Ohms/600 Ohms (Switch selectable from rear panel)
Load Impedance:	600 Ohms or greater
Output Impedance:	65 Ohms
Unweighted Output Noise:	20Hz-20kHz BANDWIDTH; -86dBm (12 microvolts RMS)
Unweighted SNR (for +4dB operating level):	92dB
Unweighted SNR (for -10dBv operating level):	83dB
Dynamic Range:	114dB
Crosstalk:	Better than 90dB up to 20kHz
Output Circuits:	Servo Balanced Transformerless
Input Circuits:	Servo Balanced Transformerless
Input CMRR:	Better than 60dB 20Hz to 10kHz
Input RF Rejection:	Better than 40dB at 800kHz, better than 60dB above 2MHz
Power Requirements:	100/120/220/240VAC ($\pm 10\%$), 50/60Hz 16 Watts
Size:	1 ³ / ₄ " (44.5mm) h x 19" (482.6mm) w x 9" (228.6mm) d
Weight:	8 lbs (3.63kg)

Accessories

Model 51 Plexiglass Security Cover

Aphex Aural Exciter covered by U.S. Patent Number 4,150,253. Additional Patents Pending. Foreign Patents granted and pending.

Aphex Systems is constantly striving to maintain the highest professional standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may differ from those listed or shown.

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