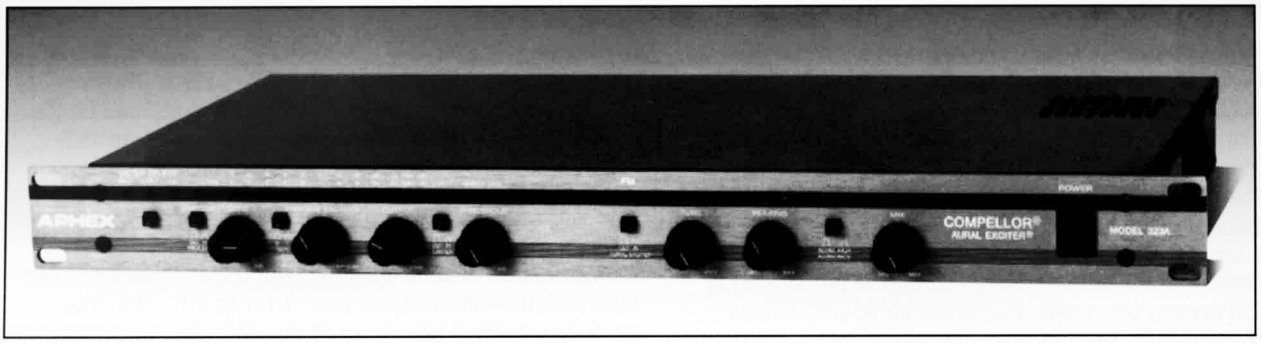
APHEX
SYSTEMS

Compellor® / Aural Exciter®
Model 323A



The Aphex Model 323A represents the most recent iteration of the popular Compellor/Aural Exciter, a single channel dynamics processor and program enhancer. The Model 323A permits absolute control over program dynamics, a benefit made possible by the patented Compellor processor. The utility of this device is greatly increased by combining intelligent dynamic control circuitry with another Aphex creation, the Aural Exciter. The Aural Exciter enhances and restores program material, resulting in increased audio presence, intelligibility and articulation.

A significant improvement in this version of the Compellor/Aural Exciter over its predecessor is the addtion of a newly developed (patents pending) Frequency Discriminate Leveler (FDL) circuit. Exhaustive research by Aphex engineers led to the discovery that, under conditions of program leveling, the human ear perceives the onset of low frequency (bass & percussion) transients different from transients at higher frequencies. This perception, as it turns out, is a direct function of the relative attack time of the leveler. Without FDL, there is a significantly greater chance that low frequency transients can create an audible "bass pull back" effect. In addition to a potential loss of bass and/or low end "punch", mid and high frequency processing can be negatively impacted. To the listener, the effect can at times be heard as a perceived loss of bass or even a "pumping" effect at the mid and treble frequency ranges.

FDL eliminates this problem by causing low frequency transients to generate a slower attack time on the initial transient. High frequency leveling is still controlled within the attack time determined by the onboard computer. From the listener's standpoint, the benefits are:

- No more bass pullback effect
- More bass punch for better music mixes
- Fast leveling can be used in more applications
- Reduced audio distortion in the leveling mode

FEATURES

Compellor

- Compressor - Smooth and transparent compression action due to intelligent attack and release control, the result of on-board Dynamic Verification Gate™ (DVG) and Dynamic Recovery Computer™ (DRC) analog control computers.
- Leveler - Delivers undetectable Automatic Gain Control (AGC) for maximum stability of program levels.
- Peak Limiter - Protects system components from sudden and potentially damaging peaks. Defeatable via a front panel switch
- "Straight Wire" Sound Quality - Employs the proven Aphex VCA 1001 for absolute audiophile quality sonic performance
- Logical Metering System - One button allows you to choose between Input, Output or Gain Reduction levels; bi-color LEDs
- Transformerless Servo-Balanced Input/Output Circuitry - Permits compatible interface with other balanced and/or single-ended components with no compromise in performance. RF filtered
- Slow/Fast Leveling Speed - Front panel selectable
- Selectable Nominal Operating Level - Your choice of -10, +4 or +8dBm operating levels selectable via a back panel switch.

Aural Exciter

- Contains the latest refinements in Aural Exciter technology
- Improved performance and reduced distortion

System

- Inputs and outputs trimmed for highest Common Mode Rejection Ratio (CMRR): assures ultra-quiet balanced line performance.
- Premium Quality Power Supply - precision engi neered toroidal power transformer, shielded and RF filtered for silent operation
- Remote controllable hardwire relay bypass
- Designed and manufactured in the U.S.A.

BENEFITS

- Creative Multiprocessor - A single rack space chassis containing an outstanding compressor, leveler, peak limiter and Aural Exciter
- Stable, reliable, accurate and extremely user friendly.

Aphex Compellor® / Aural Exciter® Model 323A

The Aphex Model 323A represents the very latest in Compellor circuit design and technology. Aphex's Compellor is unquestionably the most sophisticated self adjusting dynamic audio processor available. Its "intelligent" on-board control electronics monitor and control long term dynamics, while simultaneously providing excellent leveling, compression and peak limiting action. Set-up and operation are simple and virtually "fool-proof". The patented Compellor circuitry automatically adjusts the processing to conform to program needs, free of the sonic side effects often associated with other gain control devices.

The Aural Exciter in the Model 323A contains all of the latest improvements for the best possible fidelity and performance, including dual mode harmonics level. The Aural Exciter can be used to restore fidelity, clarity and articulation to program material for applications in broadcasting, recording and live sound.

Nominal operating levels of -10, +4 and +8dBm can be selected via a swtich on the rear panel. Input, gain reduction and output level are displayed on the front panel LED metering system and a single switch allows you to choose the monitoring mode.

The Compellor Process

The Compellor's simple audio path is composed of a servo-balanced input stage, the world-renowned Aphex 1001 VCA and a new, electronically servo-balanced output stage which can be used balanced or single-ended. The nominal operating level of the Model 320A Compellor (0 VU on the meter) is rear panel selectable between -10, +4 and +8 dBm to match virtually any system.

There are three main dectector circuits for compression, leveling and peak limiting:

Compression is accomplished over a 20dB range of input level with the ratio variable from 1.1:1 to 3:1. The attack and release times are derived from and vary with program material. This "soft knee" action helps to prevent the "choked" sound character often associated with deep compression. Additional program dependent characteristics are imparted by other sections of the Compellor's on-board computer, the Dynamic Verification Gate™ (DVG), and the Dynamic Recovery Computer™ (DRC).

The **DVG** monitors short term and long term average levels, compares them and impedes gain changes when program dynamics might be sacrificed for arbitrary gain reduction. The DVG also prevents gain release during short term program pauses which otherwise might cause audible "pumping" or "breathing" effects. Vocal program material is especially benefited by this feature, allowing voices to sound natural, even under heavy compression.

1. METER SELECT
Selects meter display to read program input or output level (in peak and VU) or gain reduction

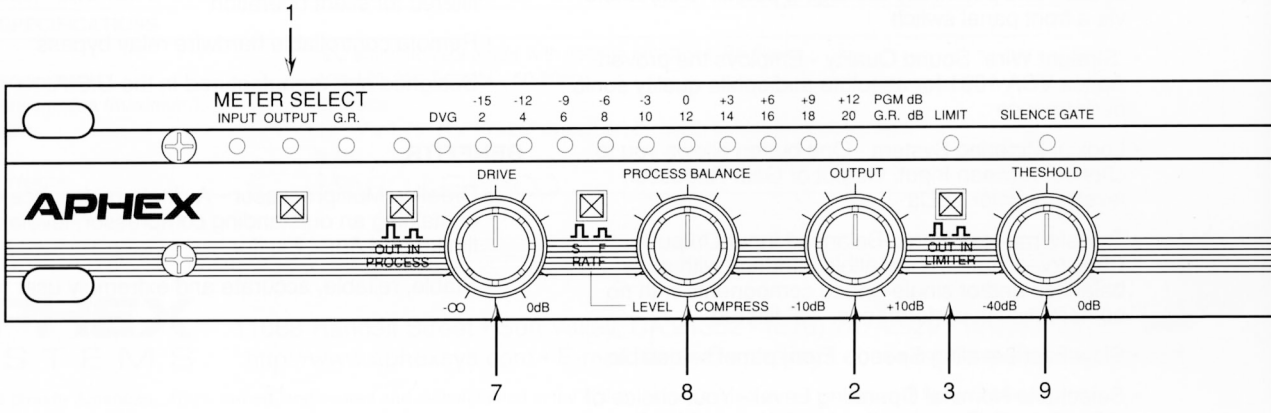
2. OUTPUT
Provides 20dB of gain control to set the desired output level after gain reduction settings are made

3. LIMITER ON/OFF
Switches the peak limiter in or out of the process

4. AURAL EXCITER IN/OUT
Switches the Aural Exciter process in or out of the 323A circuit. Does not affect gain reduction

5. HARMONIC LEVEL SWITCH
Selects the amount of harmonics generated by the Aural Exciter. Normal for general applications and high for programs requiring additional enhancement.

6. MIX
Controls the amount of enhancement mixed back into the program, from none to maximum.



The **DRC** allows very rapid recovery from gain reduction under certain complex program waveforms. Signals that are high in peak amplitude, but low in relative power, can cause an increase in compression release rate. Hence, undesired gain reduction is inhibited, preventing loss of transient waveforms, holes, etc. The sonic benefit is substantial, contributing toward the natural, open sound of the Compellor, even when the signal is highly compressed.

Leveling is performed in a manner related to the way the ear perceives loudness over long time intervals. The circuit effectively maintains output level within 1dB for a 20dB input level change. This action is slow enough to have a minimal impact on program transients or short term dynamics. The addition of FDL further improves the ability of the leveler circuit to operate smoothly and undetected by introducing a measure of control over the different dynamic characteristics of low frequency vs. high frequency program material. By allowing the Leveler to discriminate between high and low frequency dynamics, the attack time applied to low frequency program is proportionately slower than at higher frequencies. The result is the virtual elimination of "bass pull back" or "pumping" at mid and high frequencies, a condition that is sometimes caused when bass or low pitched percussion dynamics impact the attack characteristics of mid and high frequency program.

When leveling and compression are used together, the Leveler maintains the gain platform so that compression is consistent over the varying levels of program material, providing smooth sounding dynamic compression.

The Peak Limiter provides further dynamic control, capable of holding an absolute ceiling of 12 dB above the nominal 0VU level. It may be bypassed using a switch located on the front panel.

The **Silence Gate** detects significant gaps in the program material and freezes the processing, thus preventing noise "swell" or "build-up", a condition commonly audible in other automatic gain control devices. The Silence Gate immediately releases when the program resumes.

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7. DRIVE
Controls the total amount of gain reduction; clockwise = more.

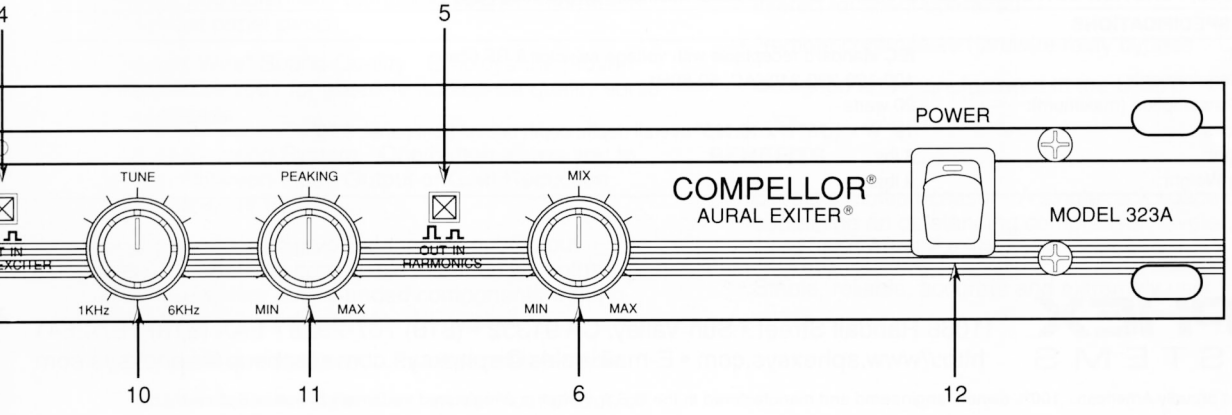
8. PROCESS BALANCE
Varies the ratio of compression to leveling without changing total gain reduction.

9. SILENCE GATE THRESHOLD
Sets the level at which the 323A's gain reduction "freezes" preventing noise buildup during quiet or silent passages.

10. TUNE
Controls the point at which the enhancement begins, from 700Hz to 7kHz, by tuning a highpass filter in the process loop.

11. PEAKING
Varies the shape of the highpass filter (similar to bandwidth or "Q") to allow accenting a wide band (flatter sound) or narrow band (peakier sound) of the program material

12. POWER
Switches AC mains on or OFF



Aphex Compellor® / Aural Exciter® Model 323A

SPECIFICATIONS

NOMINAL OPERATING LEVEL (user selectable on back)	+8dBu	+4dBu	-10 dBV
INPUT			
Connector:	3 pin XLR female, Pin 1-ground (chasis), Pin 2-hot, Pin 3-low		
Type:	Transformerless, differential servo-balanced with passive 4th order RF filter		
Impedence:	22kΩ balanced, 11kΩ unbalanced	same	same
Nominal Level:	+8dBu	+4dBu	-10dBV (-7.8dBu)
Maximum Input Level:	+27dBu	+25dBu	+10.8dBV (+13dBu)
CMRR:	>90dB/100Hz, >70dB/1khz, >50dB/20KHz	same	same
OUTPUT			
Connector:	3 pin XLR male, Pin 1-ground (chasis), Pin 2-hot, Pin 3-low		
Type:	Transformerless, differential servo-balanced (may be used unbalanced without 6dB loss)		
Impedance:	65Ω balanced/unbalanced (Nominal Load Impedance: 600Ω or greater)		
Maximum Output Level: balanced	+26dBu	+25dBu	+10.8dBV (+13dBu)
unbalanced	+21dBu	+20dBu	+10.8dBV (+13dBu)
AUDIO			
Frequency Response:	±1dB from 10Hz to 65kHz	same	same
Hum and Noise @ Unity Gain:			
No Gain Reduction	-64dBu	-67dBu	-78dBu
10dB Gain Reduction	-68dBu	-74dBu	-81dBu
Crosstalk @ 20 kHz:	-60dBu	-65dBu	-70dBu
Dynamic THD (1kHz, 20dB G.R.):	.05%	same	same
THD @ (Max.Output):	.025%	same	same
IMD (SMPTE) @(Max.Output):	.12%	.13%	.4%
SYSTEM FUNCTIONS	Compression, Frequency Discriminate Leveler, Peak Limiter, Dynamic Verification Gate (DVG), Dynamic Recovery Computer (DRC), Silence Gate, Stereo Enhance		
THRESHOLD	(0 VU with DRIVE full clockwise)		
Compressor:	30dB below nominal level		
Leveler:	30dB below nominal level		
Limiter:	12dB above nominal level		
RATIO			
Compressor:	1.1:1 to 3:1 Program Dependent		
Leveler:	20:1		
Limiter:	>30:1		
ATTACK TIMES	(For 20dB Gain Reduction):		
Compressor:	5 to 50mSec Program Dependent		
Leveler, Fast:	20Hz = 3Sec >1KHz = 1.5Sec. Frequency Dependent Leveler (FDL)		
Leveler, Slow:	20Hz = 10Sec >1KHz = 5Sec. Frequency Dependent Leveler (FDL)		
Limiter:	1μSec		
RELEASE TIMES	(For Recovery From 20dB Gain Reduction):		
Compressor:	200mSec to 1Sec Program Dependent		
Leveler, Fast:	3 Sec		
Leveler, Slow:	10 Sec		
Limiter:	200mSec		
AURAL EXCITER			
Controls:	(Drive), Out/In, Tune, Peaking, Harmonics-Norm/High, Mix		
Tuning Range:	700Hz to & 6kHz		
CONTROLS, FUNCTION SWITCHES & METERING	See front panel illustration on previous page		
OTHER SPECIFICATIONS			
AC Input:	IEC standard receptacle with voltage selector & RF filter.		
Power Requirements:	100-120-220-240VAC, 50-60Hz		
Power Consumption (maximum):	20 watts		
Dimensions:	19" W x 1.75" H x 10.125" overall depth, depth behind front panel: 9.25"		
Net Weight:	8 lbs.		
Shipping Weight:	9 lbs.		

APHEX SYSTEMS

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