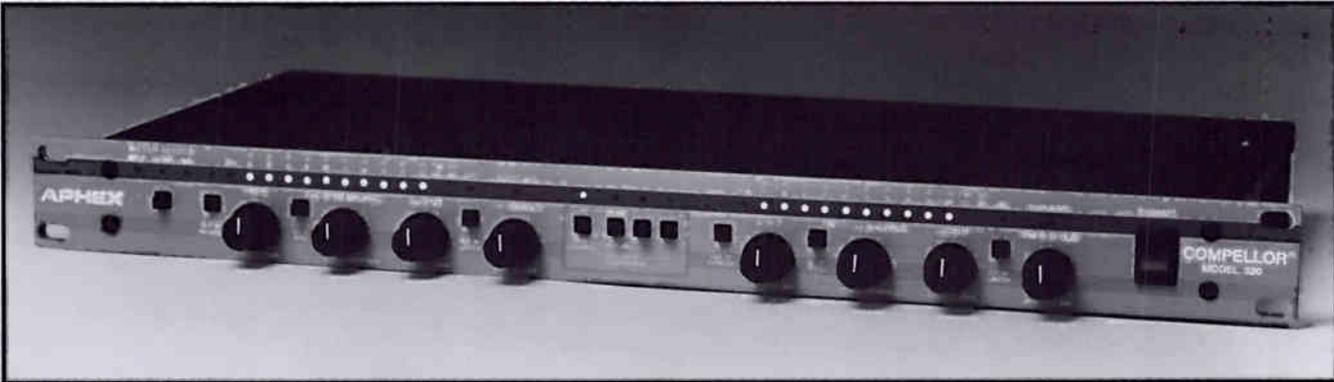


*Compellor®*  
*Dual Mono/Stereo*  
*Compressor/Leveler*  
*Model 320*



The Compellor Model 320 builds upon the legacy established by the Model 300 in dynamic audio processing. The 320 delivers intelligent compression, leveling and peak limiting simultaneously. Patented control circuits include analog computers that constantly analyze the input signal and vary the control characteristics. This provides for invisible operation regardless of the dynamics of program. Simply adjust the drive level to generate the desired amount of processing, set the process balance between leveling and compression and adjust the output level for unity gain. The Compellor will then provide complete dynamic control - smooth, inaudible compression, increased loudness, desired program density, and the freedom from constant gain riding - all automatically. Its unique circuitry actually enhances transient qualities, making even heavy processing undetectable.

This smart, versatile and cost effective processor is equally at home in broadcast processing, microphone control, audio recording and production, tape duplicating, live sound and film dubbing.

The 320 features dual mono operation which allows completely independent processing of two mono sources as is sometimes necessary in music recording, post production or sound reinforcement. Two modes of stereo are offered by linking the leveling control signals or linking both the compression and leveling signals. A simple metering select alternates the display of input, output or gain reduction levels. All potentiometers are detented for accurate resetting of controls. Leveling speed (fast/slow) is switch selectable from the front panel as is a defeat for the peak limiter. On the back panel, the operating reference level is switchable from -10,+4 or +8 dBm and RJ-11 connectors facilitate remote, relay bypass of the unit.

**Intelligent AGC for consistent program levels**

**"Invisible" compression for tighter dynamics without audible effect**

**Instantaneous peak limiting for equipment protection (with Defeat)**

**Adaptive control circuits for simple set-up and no readjustment for varying programs**

# Aphex Compellor Model 320

## AUDIO COMPRESSOR/LEVELER/PEAK LIMITER

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 COMPELLOR (and 0VU on the meter) is rear panel selectable for -10, +4, and +8dBm to match any system.

There are three main detector circuits for compression, leveling and peak limiting.

**LEVELING** is performed in a manner related to the way the ear perceives loudness over long time intervals. The circuit maintains output level within 1dB for a 20dB input level change. The action is slow enough to have minimal effect on program transients or short term dynamics.

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

The leveling action is interactive between the two channels when the leveling link button is depressed, one control signal is used to preserve overall balance and stereo imaging.

**COMPRESSION** is also accomplished over a 20dB range of input levels, with the ratio varying from 1.1:1 to 8:1, the attack and release times derived from, and varying with, the program material. This "soft knee" helps to prevent the "choked" sound usually associated with deep compression. Further program dependent characteristics are imparted by other sections of the COMPELLOR's 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 would cause "pumping" or "breathing" effects. Vocal material is especially benefited by this feature, sounding natural even when extremely compressed. DVG action is indicated by a front panel LED.

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

The **PEAK LIMITER** provides further dynamic control, holding an absolute ceiling 12dB above the nominal (0VU) level. It may be bypassed using a front panel switch.

The **SILENCE GATE** detects significant gaps in program material and freezes the processing, preventing noise "swell" or buildup common in other AGC devices, then instantly releases when program resumes.

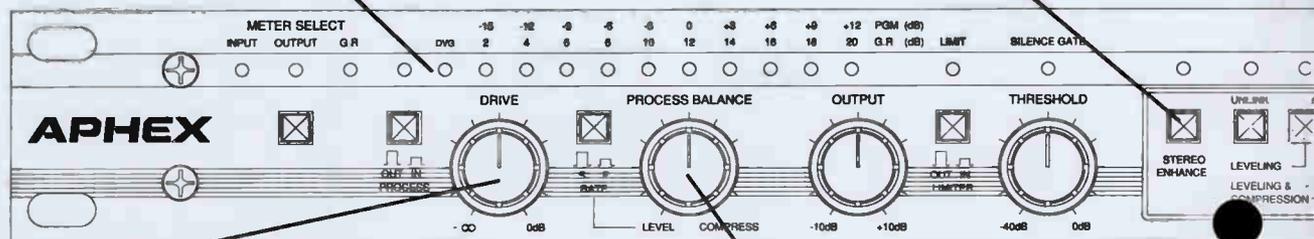
The **STEREO ENHANCE** feature does just that. By detecting and matrixing certain stereo information and sending it to the sidechains, STEREO ENHANCE creates a subtle natural widening of the stereo image that is fully mono compatible. It is not a "stereo synthesizer" and it has no effect on mono or center channel material.

COMPELLOR, Dynamic Verification Gate and Dynamic Recovery Computer are trademarks of Aphex Systems Ltd.

### INFORMATIVE METERING

In the **PROGRAM MODE**, VU (average) level is shown as a red bar; simultaneously peak level is shown as a green bar above the red! This novel visual presentation of dynamic range can be switched to read input or output, allowing an instant display of changes in peak to average ratio. In the **GAIN REDUCTION** mode, the meters display compression as a green bar and leveling as a red dot on the same scale, thus showing total gain reduction at a glance.

**STEREO ENHANCE** switches in a unique detection and matrixing circuit which causes a pleasant widening of the stereo image without affecting non-stereo information. An LED indicates circuit operation.



**DRIVE** is a DC control that varies the output of the VCA and, thus, the amount of processing. Maximum compression and/or leveling is achieved with the control fully clockwise.

**PROCESS BALANCE** sets the ratio between compression and leveling depending on the need. A 50/50 balance is most useful, as the leveling keeps the compression constant over varying program levels.

**IN/OUT ins** is also a fail LED indicates each chann

## APPLICATIONS

### BROADCASTING

In the race for loudness it is quality which usually suffers. When required to work too hard, even the best multi-band processors degrade the audio. By pre-conditioning the signal with the COMPELLOR, the following processor is fed a signal with an optimized dynamic range, thus allowing it to be operated in its "sweet spot" without concern for possible overload. Since the COMPELLOR does not degrade the audio, the total result will be cleaner sound, with equal, or greater, apparent loudness.

A different problem faces classical stations, especially with the newly expanded dynamic range of digital audio. The quieter passages get "lost" in the ambient noise floor, which may, in a moving automobile be higher by more than 30dB. The COMPELLOR can "lift" these passages without changing the dynamic and transient feel, thereby pleasing the audiophile and commuter alike.

Another benefit of the COMPELLOR in the broadcast chain is that fader settings on the console become less critical. The sound of the station will not change from the DJ who loves the sound of the meters pegging to the DJ who is afraid to make them move.

Television broadcasters are often faced with the problem of a large difference of apparent loudness between program material and commercials. With a COMPELLOR, the apparent loudness of the program can be increased, while already heavily compressed commercials go through without further processing. The net result is consistent apparent levels from program to program and from program to commercial.

### VIDEO/FILM POST PRODUCTION

Matching levels among multiple sources, within a single source and transitions between dialogue is often a job which requires more than one person to ride gain and switch sources at the appropriate times. The COMPELLOR makes the job much simpler.

### SOUND REINFORCEMENT/SOUND CONTRACTING

Feedback is one of the biggest problems in live sound. Just when the fader on a vocal input is set, the vocalist starts to sing louder. The COMPELLOR, however, can maintain maximum level before feedback.

The COMPELLOR also shines in controlling multiple sources of different levels, such as conferences. The mic levels will all be equal in approximate loudness without changing the character of each individual's voice.

Paging systems can sound louder and clearer without any overload distortion and without increasing amplification.

### STL/PHONE LINE DRIVER

Maintaining consistent drive levels while controlling peaks is just another way of describing the COMPELLOR. High modulation of the STL can be sustained without concern for overload. Audio level will be kept well above the noise floor of phone lines or STL, again without crashing anything following the COMPELLOR.

### CARTING/TAPE DUPLICATION

Different audio levels from cart to cart is an all too typical problem. With the COMPELLOR, levels can be easily maintained to assure maximum signal to noise performance without tape saturation. The COMPELLOR is especially useful in assembling tapes from several sources with varying levels onto a single tape.

### MIC PROCESSING

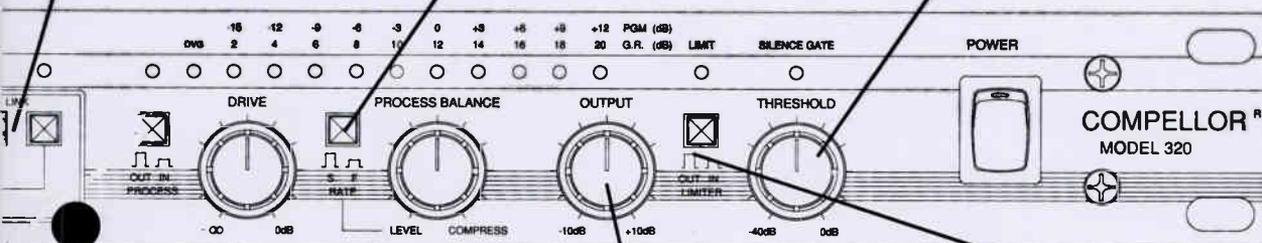
One of the most difficult signals a processor encounters is the human voice. The COMPELLOR works beautifully on voice by producing a dense, "punchy" sound while retaining dynamic and transient qualities. The apparent level will be consistent without changing the urgency and excitement of a screaming DJ or altering the intimacy of a soft-spoken female voice.

LINK for dual mono operation.

LINK selects one of the stereo modes.: leveling control signal or compression and leveling signals linked.

LEVELING SPEED  
Fast or Slow

SILENCE GATE THRESHOLD sets the threshold of the SILENCE GATE between -40 to 0dB referenced to nominal input level. Below threshold the SILENCE GATE freezes gain reduction release, such as during program gaps or quiet passages. This will prevent noise buildup and permits normal fades, even with heavy processing. An LED shows SILENCE GATE action. Two SILENCE GATES for dual mono operation.

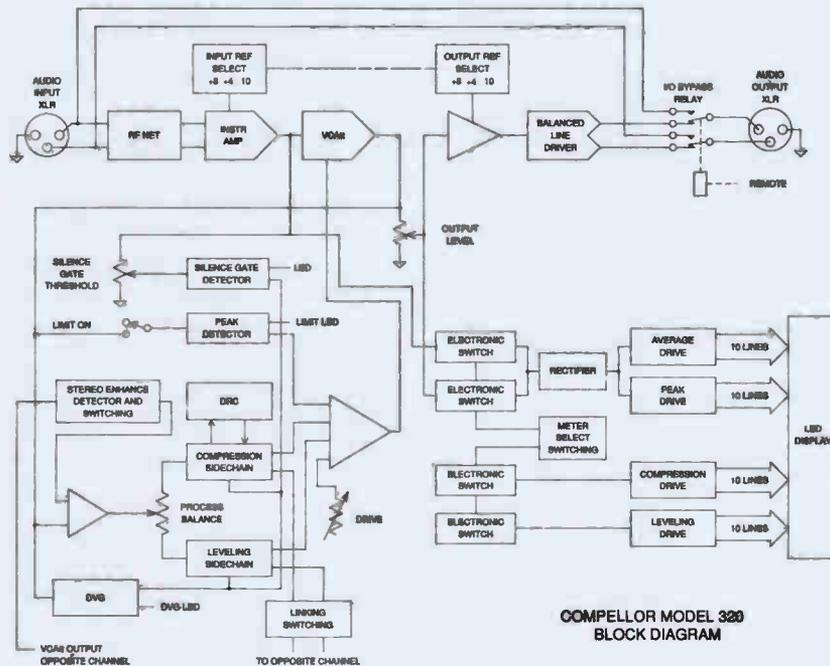


LINK takes the COMPELLOR in or out of circuit for dual mono operation. Sealed relays provide a hardware bypass which allows for a feedthrough in case of power supply failure. The status is visible as a glance (red-in, green-out). One for each channel (remote controllable), RJ-11 connectors.

OUTPUT adjusts the level over a 20dB range to compensate for heavy gain reduction.

PEAK LIMITER DEFEAT

# Compellor<sup>®</sup> Dual Mono/Stereo Compressor/Leveler Model 320



## Specifications

(Architects and Engineers Specifications and drawings available on disk.)

### INPUT

Type RF-filtered true instrumentation differential servo balanced  
 Input impedance 50k Ohms balanced  
 Nominal operating level User selectable 0VU = -10, +4, +8dBm  
 Max input level +27dBm  
 CMRR Greater than 60dB

### SIDE CHAIN

**Compression**  
 Attack time 5-50m Sec  
 Release time 200m Sec-1 Sec  
 Ratio 1.1:1-8:1  
 Threshold 30dB below nominal level (0VU) with drive full clockwise

**Leveling**  
 Attack time 2.5 Sec  
 Release time 5 Sec  
 Rate 0.5-5dB/Sec  
 Threshold Same as Compression

**Peak Limiter**  
 Attack Time 1µSec  
 Release Time 10m Sec  
 Threshold 12dB above nominal level (0VU)  
 Gain reduction element APHEX VCA 1001 Voltage Controlled Attenuator

### OUTPUT

Type Electronically balanced transformerless. May be operated balanced or single-ended  
 Source impedance 60 Ohm balanced. 30 Ohm unbalanced  
 Maximum output +27dBm balanced or +21dBm unbalanced  
 Bandwidth +0-1dB 5Hz-65kHz  
 Hum and noise unity gain, +4 op level -80dBm  
 Noise referred to max output -102dBm  
 Dynamic THD 10dB compression, 1kHz, +4 op level, 0.05%; leveling 0.03%  
 IMD 0.03%

**SIZE** 1 3/4"H x 19"W x 10"D

**SHIPPING WEIGHT** 11 lbs.

**POWER REQUIREMENTS** 90-250 VAC, 50-60Hz, 20W. AC input is IEC standard receptacle, voltage select & RF filter

**OPERATING TEMPERATURE RANGE** 0-40°C

**REMOTE LOGIC** Short to Ground; RJ-11 Connector. X2

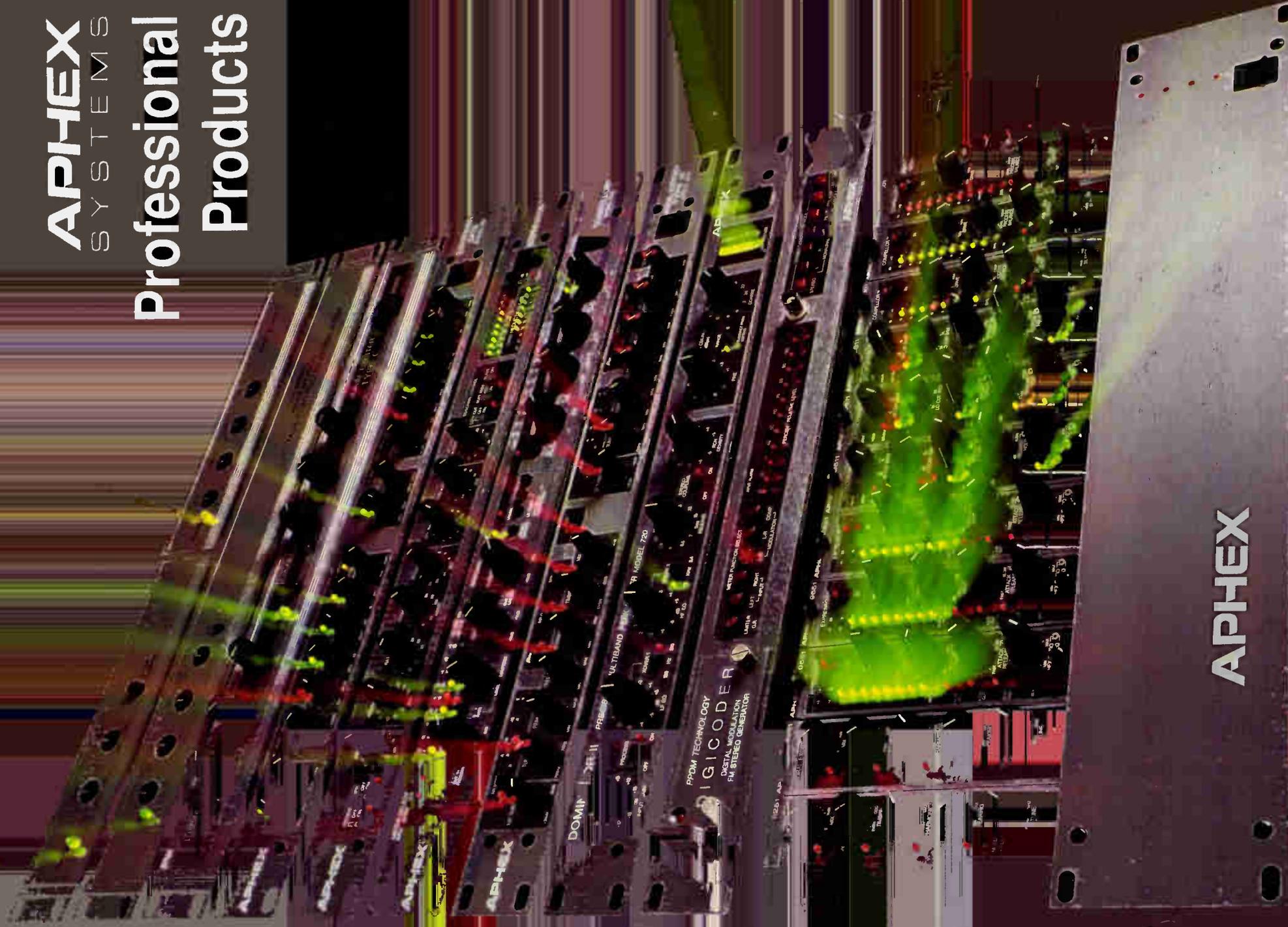
# APHEX

SYSTEMS 11068 Randall Street • Sun Valley, CA 91352 • (818) 767-2929 • FAX (818) 767-2641

Aphex is proudly American...100% owned, engineered and manufactured in the U.S.A.

Aphex 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.

# APHEX SYSTEMS Professional Products



APHEX

# Aural Exciters\*

The Aphex Aural Exciter is 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 increase 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, an Aural Exciter extends the high frequencies. It is a single-ended process that can be applied at any point in the audio chain, and needs no decoding.

## Aural Exciter Applications

- Recording Studio Tracking and Mixdowns
- Sound Reinforcement
- Film & Video
- "On Air" Broadcasting
- AM/FM Broadcasting
- Tape Duplication
- Narrow Format Recording and Mixing



## Aural Exciter Type III Model 250

This fully professional Aural Exciter is loaded with powerful processing features and improved circuitry. Noise and distortion are virtually eliminated in the Type III circuitry. The two modes of noise reduction now make enhancement possible while actually reducing noise from noisy sources.

The "SPR" (*Spectral Phase Refractor*) function of the Type III is a totally new concept in psychoacoustic enhancement. The "SPR" corrects the bass delay anomaly inherent in the recording process to restore clarity and openness, and significantly increases the apparent bass energy level without adding any amplitude equalization or "bass boost".

The "Drive" control of previous Aural Exciters has been eliminated to make the Type III faster and eas-

ier to use. *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 II. 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.

Additional features of the Aural Exciter Type III include: Servo Balanced I/O to XLR-Type Connectors; Aphex VCA 1001; I/O Levels from +4dBm to -10dBv, balanced or unbalanced operation automatically; RF Filtered AC Power Input; Remote Controllable Bypass Relay.



## Aural Exciter Type C<sup>2</sup> with BIG BOTTOM™ Model 104

The NEW Aural Exciter Type C<sup>2</sup> embodies the next technological leap in enhancement processing, with two processing types to allow the user to enhance both ends of the spectrum. The Aural Exciter portion utilizes the same psychoacoustic principals of the

professional Type III in an all new circuit that's virtually noise free! Harmonics setting is simplified with a switch for normal and high enhancement drive. BIG BOTTOM is the revolutionary new bass enhancer that dramatically increases bass presence, density and loud-

ness without vastly increasing peak amplitude or generating sub-harmonics; both potentially damaging to speakers. The Type C<sup>2</sup> features 1/4" phone jacks for audio interface and can be operated at -10 and +4.



## Modular Aural Exciters Models 519B, 520C

Models 519B and 520C Aural Exciters are plug-in modules that fit TOA 900, University (Raymer) 9000, Gemco and Peavy MA Series power amplifiers. The 519B or 520C installs in one input module space in the rear of the amplifier, taking its power from the amplifier. Both models feature a jumper selectable Bass Boost for 0, +6 or +12 dB boost.

The 519B connects to the amplifier's preamp OUT and amp IN jacks on the rear with standard phono type cords, and processes the entire amplifier output.

The 520C is a single channel muting input card. Its RCA type phono jack takes any line level unbalanced input. The operating level may be selected for -10dBv or +4dBm.

# Modular Processing System

9000 Series



The Aphex Modular System was designed to provide all the processing power of several of our most popular products in a space saving size. All feature our Servo-Balanced inputs and outputs. Currently the following products are available as single channel modules:

**Aural Exciter Model 9251** - the signal enhancer that increases intelligibility, presence, clarity, and detail.

**Compellor Model 9301** - the "intelligent" compressor/leveler that controls levels as if a mixer were riding faders.

**Expander/Gate Model 9611** - simply the world's finest gate, no one ever met our \$10,000 challenge to find a better one!

**Expressor Model 9651** - a full featured compressor/limiter that lets you tailor the sound your way.

**NEW! Dominator II Model 9721** (not pictured) - the "ultimate" peak limiter, the Dominator's unique layout combines multiband limiting with a peak clipper for absolute peak control without spectral gain

intermodulation. The 9721 features adjustable density and a limiter threshold adjustable in 1dB steps over a 22dB range. Switchable onboard pre/de-emphasis for broadcast applications.

**NEW! Parametric Equalizer Model 9901** - three overlapping bands of fully parametric equalization, each with 15dB boost or cut. Peak or shelf filter shapes on each band (an Aphex first) allows for even greater tonal possibilities! Output clip LED indicator.

**Model 9000R** is the basic building block of the Aphex Modular Rack System. It can hold 11 Aphex or dbx® compatible modules.

**Model 9000PS** is a heavy duty power supply designed to provide clean power to the Model 9000R Modular System Rack, providing  $\pm 15V @ 3A$  for the modules. The Model 9001PS is designed for the Model 9000R when it uses a combination of Aphex and dbx 900 Series modules. The 9001PS provides both  $\pm 15V @ 3A$  and  $\pm 24V @ 1.5A$ .



## APHEX

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Aphex, Aural Exciter and Compellor are registered trademarks of Aphex Systems Ltd.; Dominator and Expressor are trademarks of Aphex Systems. dbx® is a registered trademark of Carillon Electronics Corporation.

Aural Exciter is covered by U. S. Patent No. 4,150,253. Foreign patents issued. Patents issued and pending for Compellor, Dominator and Expressor.

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SF-P592

Printed in U.S.A.

# Compellor<sup>®</sup>

Compressor/Leveler/Limiter

Model 320 (Dual Mono/Stereo)

Model 301 (Mono)

Model 303 (Mono with Aural Exciter)

*The Compellor is the world's most acclaimed audio level processor. Its completely transparent audio path is comprised of servo-balanced transformerless inputs and outputs terminated to XLR-type jacks, and the Aphex VCA 1001.*

*The Compellor has two "Brains" - the Dynamic Verification Gate (DVG) and the Dynamic Release Computer (DRC). These "Brains" control the attack and release characteristics of the leveler and the compressor based upon the texture of the input. This allows the Compellor to be set once ... even if the input changes between rock, classical, jazz, voice and back again.*

*The user simply decides how much the lowest level signal will be brought up and the proportion of leveling to compression, and trims the output for unity gain.*

*The result sounds as if someone is riding faders extremely well. There is no change in the sound quality - only level correction - automatic and seamless.*



## Applications

**Broadcasting** — The Compellor will provide a clean "consistent sound when used as a pre-processor. Fader settings are less critical, the sound of the station will not change from DJ to DJ. For TV, level changes between programs and commercials will be smoothed out without affecting the audio quality.

**Production** — It is almost impossible to get an "effect" or "coloration" from the Compellor. It achieves perfect uncolored level control for any particular track and is excellent for processing a total mix to maintain consistency and loudness.

**Sound Reinforcement** — The Compellor can maintain maximum level before feedback no matter how loud the soloist gets. In conference systems, the Compellor will keep all speakers in equal approximate loudness without changing the character of each individual's voice. Paging systems can sound louder and cleaner without any overload distortion.

**Film Dubbing** — The Compellor makes matching levels between multiple sources and within a single source a simple job. It is especially effective on optical sound tracks which are very sensitive to any peak overload.

**Cable TV Systems** — By using a Compellor for each channel on the system, viewers will receive consistent levels when changing channels. It also "levels" out overprocessed spots thus eliminating subscriber complaints.

**STL/Phone Line Driver** — With the Compellor, high modulation of the STL can be easily maintained without concern for overload. Audio level will be kept well above the noise floor of phone lines or STL without crashing anything following the Compellor.

**Carting/Tape Duplication** — The Compellor is especially useful in assembling tapes from several sources with varying levels onto a single tape. It assures maximum signal-to-noise performance without any tape saturation.

**MIC Processing** — The Compellor works beautifully on voice by producing a consistent sound while retaining dynamic and transient qualities. The apparent level will be consistent without changing the urgency and excitement of a DJ or altering the intimacy of a soft-spoken voice.

## FEATURES: Model 320

- Dual Mono/Stereo
- Detented Controls
- Remote Relay Bypass
- Front Panel Defeatable Peak Limiter
- Selectable Leveling Speed
- Two Stereo Link Modes
- Operating Level Selectable at -10dBv, +4dBm or +8dBm

# Expressor<sup>™</sup>

Compressor/Limiter

Model 651  
(Single Channel)



The "sound" you were looking for, but could not find! "Punch, slap, fat, pump or squeeze" ... now you can get it fast ... get it clean with fully adjustable controls and unparalleled audio performance. The exclusive high frequency expander (HFX) allows higher ratios without the "dullness" of other wideband devices. "SPR"

restores bass clarity and punch without any increase in amplitude. Servo-balanced input and output on XLR-type connectors allow use in any audio environment. Side Chain patch point (1/4" connector); two units linkable for stereo operation.

# Dominator II™

Multiband Precision Peak  
Processor  
Model 720  
Model 723



*The Dominator II is a stereo (dual channel linked) multiband peak limiter with zero overshoot. Once the PEAK CEILING is set, there is no higher amplitude in the output. Awareness of headroom limitations and the price of exceeding those limitations is important for any audio application and critical for most (especially digital). The Dominator II allows the user to work confidently, creatively and quickly by freeing the user from the fear of "crashing".*

*In addition to providing peak protection, the Dominator II may be used to gain greater loudness. Compared to conventional limiters, the Dominator II will provide at least 3 to 6dB greater loudness with higher sound quality.*

*Achieving this "brick-wall" result and loudness while retaining complete fidelity is the art and science of the Dominator II.*

## Applications

Because of its function and performance, the Dominator II has applications in almost all audio fields such as:

- Broadcasting—Production and Transmission for AM,FM,TV
- Satellite and STL Uplink
- Recording
- Sampling
- Mixing
- Mastering—CD, Film, Analog Disk
- Sound Reinforcement
- Location Recording
- Video Post-Production
- Tape Duplication

*Model 720 is designed for applications in which the frequency response is flat - recording, mixing, mastering, sampling, sound reinforcement and certain broadcast applications.*

*Model 723 is designed for applications in which the frequency response must follow a pre-emphasis curve (either 50 or 75 microsecond) - broadcasting, satellite and STL uplink.*

## Features

- 104dB Dynamic Range (5-times better than digital)
- Servo-Balanced Transformerless Inputs and Outputs terminated to XLR-type jacks
- Relay Bypass, Remote Controllable
- Detented Potentiometers
- Peak Protection *without* Pumping or Spectral Gain Intermodulation
- Peak Ceiling Trimmable in 0.2dB Steps over a 34dB Range
- Adjustable Density (Relative Crest Height)
- Switchable Crossover Frequencies

# Two-Channel Expander/Gate

Model 612



The Model 612 is a true dual channel expander using downward expansion with a variable ratio (1.2:1 to 30:1), thus allowing an infinite variety of dynamics control which are impossible with a gate. High and Low pass filters on the KEY input allow frequency selected gating. With high ratio, the Model 612 becomes the world's finest gate. It is also a ducker, allowing a key input to lower (duck) the level of the audio input.

The "heart" of the Expander/Gate is the Aphex VCA 1001 which will not "click" regardless of attack or release time! Attack time as low as 4 microseconds (waveform dependent). Absolute stability, prevents settings from "wandering".

XLR-type Servo-Balanced I/O means foolproof installing with balanced or unbalanced systems.

## Distribution Amplifier

Model 120A



The Model 120A is a one in, one through, four out distribution amplifier. The all metal half-rack chassis provides maximum shielding while the inputs and outputs are RF protected. The Servo-Balanced input circuit provides high common-mode rejection, and its high input impedance allows several DAs to be driven from the same source. The four independently trimmed isolated output amplifiers are very low impedance allowing long lines and capacitive loads to

be easily driven without loss of stability or frequency response. The electronically Servo-Balanced input and outputs provide all the benefits of transformers without degrading the audio.

The 120A was designed to provide outstanding audio performance with a bandwidth to 100kHz and dynamic range 10x better than 16 bit digital. Optional rack mount kit available (Aphex Part No. 44-008).

## Audio Level Interface

Model 124A



A -10dBV to +4dBm interface, for linking consumer hi-fi equipment such as tape decks, VCRs, equalizers, CD players and new DAT tape recorders to professional equipment. Like all Aphex products, the 124A features superb audio performance. Inputs and outputs are transformerless, Servo-Balanced for wide, flat

frequency response and perfect square waves to preserve transients. Hum and noise rejection are very high while the noise and distortion are almost non-existent. All inputs and outputs are carefully filtered for freedom from RF interference. Fits in a half rack space. Optional rack mount kit available (Aphex Part No. 44-008).

## Two Channel Voltage Controlled Attenuator

Model 150



The Aphex 150 audio remote control is simple to hook-up, easy to use and features unmatched sonic transparency. The 150 consists of two independent self-contained channels with the highest quality VCA — the Aphex VCA 1001. Each channel has Servo-Balanced inputs and outputs for safe, easy installation. The fully buffered control ports can be run independently or linked for stereo operation.

The 150 can be used in the most demanding professional situations without degrading audio signals. An ordinary pot or switch is all that is needed for full remote control of audio signals in a wide variety of applications. All level settings are protected from power outages by a battery

back-up. The sturdy steel package provides excellent shielding and may be used stand-alone or rack mounted.

One Model 150 supports up to 16 Model 175 Remote Controllers; 4 Model 176 Remote Controllers; 16 Model 177 Remote Controllers; unlimited digital remotes without displays; one analog remote per channel using a potentiometer.

### Optional Accessories

Model 175

Digital Wall Mount Remote with bargraph display.

Model 176

Digital Wall Mount Remote with numeric display

Model 177

Digital Wall Remote with security key operation and bargraph display.