

INNOVATIVE PRODUCTS FROM APHEX, FOR SUPERIOR SOUND REPRODUCTION

The remarkable Aphex Aural Exciter is a unique proprietary audio processing device that makes use of highly advanced psychoacoustic principals to effectively restore and enhance audio presence, brightness and intelligibility. The patented psychoacoustic process creates the perception of an increase in mid and high frequency energy, with no actual increase in power or level.

The Aural Exciter can produce dramatically improved clarity, dimension and character in any sound system or application. It can also reduce distortion in P.A. and sound reinforcement applications by providing increased penetration and audibility at reduced power levels. The device can be added to virtually any new or existing system with no danger of overloading other components or trigger-

ing compressors or limiters.

The Aural Exciter is a single-ended process, requiring no decoder. Once encoded, copies made from a processed tape sound every bit as good as the original.

The Aphex Aural Exciter is available in three models, each is specially designed for a specific application.



APHEX II-S

The Studio Aural Exciter is engineered for the sophisticated recording and production studio, as well as advanced sound reinforcement applications. In the studio, the Aural Exciter effectively restores the presence and clarity which the recording process removes, reviving that bright, unmistakable "live" quality. It can also make certain segments "stand out" without actually being louder. Used typically in stereo mixdown situations, this latest version of the Aural Exciter features increased flexibility so it's ideal for virtually all types of program material, from the hardest rock and roll, to the subtlest movie dialogue and sound effects.

The Aural Exciter is also well suited to stage and concert use. It can make any P.A. system sound much cleaner, brighter and intelligible without adding any level or feedback to the house or monitor system. It is particularly effective in filling acoustic spaces to eliminate dead spots. The device cleans up sound in overly reverberant halls and makes speaker location much less critical.

SPECIFICATIONS APHEX II

FREQ. RESPONSE: 15HZ - 50KHZ +0-.2 dB
THD, IMD: .05% at max I/O
NOISE: 110dB below max output
CROSSTALK: Better than -80dB
MAX I/O (with standard Jensen output xfrmr): Selectable +21dB, +24Bm, + a user definable position
INPUT IMPEDANCE: Selectable 600ohm or bridging, 40K Bal, 60K unbal



APHEX II-B

The Broadcast Aural Exciter has all the remarkable features and capabilities of the Studio unit, plus complete R.F. shielding and safety bypass relays in the event of power failure. Designed specifically for on-air use, this unit provides AM stations with the clarity and brightness of FM, while restoring to FM the naturalness and openness normally lost due to processing.

The most impressive aspect of the Aphex Broadcast Aural Exciter is the fact that the lower the quality of the playback system, the better the comparative benefit derived. The sound of your broadcast will satisfy the most demanding audiophile, and at the same time grab the attention of the rush-hour commuter.



APHEX AURAL EXCITER TYPE B

The Aural Exciter Type B is engineered for less demanding situations. It utilizes the same psychoacoustic principles to make Aural Excitement available to small clubs, studios, halls, restaurants, musicians, tape duplicators and sound contractors operating on a more modest budget. Retaining the most important features of its bigger brothers, the Aural Exciter Type B is a small, lightweight package with extensive capabilities limited only by the user's imagination.

LIST
494.98 / OWLS
365.00

SPECIFICATIONS - TYPE B

FREQ. RESPONSE: 10 HZ - 100K HZ
 ± .05 dB
 Less than .01%
THD: -90 dBV
NOISE: -90 dBV
OPERATING LEVEL: Selectable -10 or 0 dBm
MAX I/O: +20 dBm
INPUT IMPEDANCE: 47K ohm unbalanced
OUTPUT IMPEDANCE: 150 ohm unbalanced
METER: Tri-colored LED for drive level
SIZE: 1-3/4" x 19" x 6"
WEIGHT: 4.5 lbs.
POWER REQUIREMENT: 100 - 130 VAC 50 - 60Hz (export version available)



COMPPELLOR™ COMPRESSOR/LEVELER/PEAK LIMITER

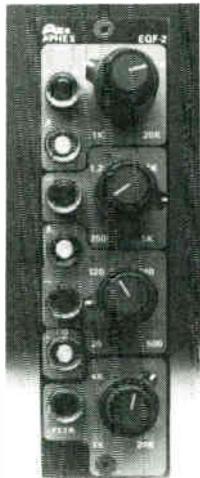
The Compellor™ is a unique, revolutionary audio processing tool that combines the functions of a fast compressor with slow gain riding and an overall peak limiter. It provides complete flexibility in dynamics control when used as a broadcast pre-processor, as well as in the recording

studio or live p.a. situation. The resulting sound is smooth and dense with an increase in perceived loudness and brightness.

The variable slope compressor operates over a 30 dB range with attack and release times controlled by program dynamics, eliminating "pumping" and the choked sound associated with deep compression.

Audio leveling over a 20 dB range maintains the audio in the "knee" of the compressor providing a uniquely dynamic compression which is rich in transient quality and openness, with an absolute ceiling maintained by the peak limiter.

The balance between compression and leveling actions is continuously variable; adapting the Compellor™ and its effects to an enormous variety of material.



EQF-2

The EQF-2 combines a 3-band sweep equalizer with a sweep Hi and Lo pass filter section. The EQ has switchable peak/shelf on the Hi and Lo sections, and reciprocal 12 dB of cut and boost on all sections. The filters are second order Butterworth and can be switched separately from the EQ section

SPECIFICATIONS

FREQ. RESPONSE: $\pm 1\text{dB}$ 20 Hz–20 kHz all sections in
THD & IMD: Below 0.1% at max. I/O
NOISE: –123 dB below max. I/O
FILTERS: Hi pass 20-500 Hz
 Lo pass 1-20 kHz
EQ LOW: 25–500 Hz
MID: 250–5kHz
HI: 1–20kHz
MAX. I/O: +20dBm with optional Jensen xfrmr
SIZE: 1-1/2" x 5-1/4" x 6"
 (industry standard)
WEIGHT: 2 lbs.

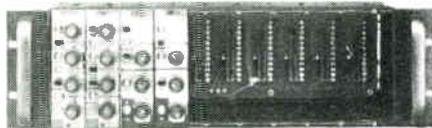


CX-1

The CX-1 is a very versatile module combining a "soft knee" compressor/limiter with a switchable expander/gate. The CX-1 uses the proprietary Aphex VCA chip to provide an extremely clean overall sound. The expander is adjustable from 0 to 100 dB of expansion (gating) and is the only noise gate on the market that can be guaranteed not to click or pop. The unit features a multi-functional LED display that indicates input, output, compression or expansion levels.

SPECIFICATIONS

BANDWIDTH: $\pm 1\text{dB}$ 20–20 KHz all sections
THD, IMD: Less than 0.2% at max I/O
NOISE: –85 dBm
MAX I/O: +20 dBm (+30 dBm with optional Jensen xfrmr)
SIZE: 1-1/2" x 5-1/4" x 6"
 (industry standard)
WEIGHT: 2 lbs.



R-1

The R-1 holds 10 Aphex modules and provides barrier strip access to all inputs and outputs. Power and ground are bussed.



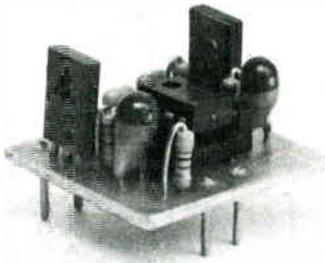
PS-1 \$275.00

The PS-1 is a $\pm 16\text{V}$ @ 3.4A regulated supply with OVP that will power two R-1 racks.



4B-1

Self-powered, the 4B-1 is for the mobile engineer. It holds 4 Aphex modules and has a built-in patch board on the rear with 1/4" and T-T size jacks.



2521-OPERATIONAL MODULE

The 2521 Operational Module is a high speed, high output, short circuit proof buffer that takes on the characteristics of the IC that is plugged into it. It is current limited and can put out a full watt of power into a 62 ohm load

The 2521 output transistors have a 3 amp rating for superior reliability. The unit is also 100% field repairable, so there's never a need to discard a complete module because of a defective 10* resistor. The 2521 can be continually and easily updated to meet changing needs.

FEATURES

- 100% Field-repairable
- 100% short circuit proof
- Greatly improved overload characteristics
- Built-in power decoupling
- Socketed IC eliminates obsolescence
- Extremely low noise current

SPECIFICATIONS

BANDWIDTH: 4MHz
THD (at clipping –1 dB): 0.02%
IMD: 0.02%
GAIN: 50,000 Min.
SLEW RATE: >10 v/ μ Sec.
OUTPUT NOISE: –113 dBm
MAXIMUM INPUT: 30 Volts P-P
MAXIMUM POWER OUTPUT: 1 Watt (+30 dBm)
MAXIMUM VOLTS OUTPUT: Supply –4 volts P-P
MAX. SUPPLY VOLTAGE: ± 18 volts
 (with LF 351)

VCA PRODUCTS

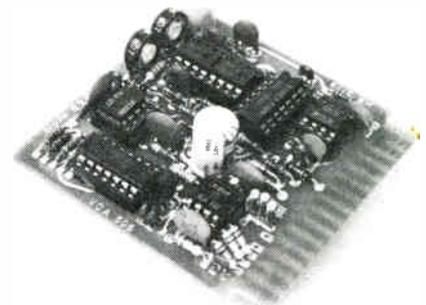


1537A VCA IC

The 1537A is the only monolithic Class A voltage-controlled attenuator on the market today. Its patented design features extremely low distortion, low noise, high stability and wide dynamic range. It can provide more than 100dB of attenuation at +20 dBm. Its high slew rate gives low T.I.M. and makes it useable from DC to 50 MHz

SPECIFICATIONS

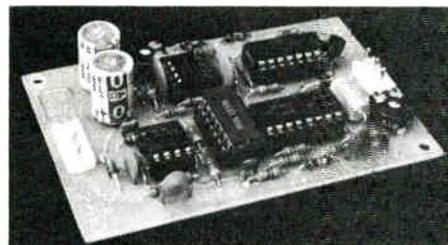
BANDWIDTH: DC to 50 MHz
THD: 0.004% TYP
IMD: 0.03% TYP
NOISE: –90 dBV worst case
MAX. ATTENUATION: >100 dB. DC –200 kHz



VCA 505

The VCA 505 is an expanded version of the highly-acclaimed 1537A Voltage Controlled Attenuator. It utilizes a 15-pin card edge mount package for easy installation, has multiple buffered control inputs for maximum versatility, and requires no additional circuitry.

SIZE: 2.75" high x 2.85" deep x .72" wide



VCA 500A

The new VCA 500 A utilizes a 1537A VCA IC to significantly improve the performance and overall sound quality of the MCI JH-500 series console. Conversion takes only a few minutes per channel with plug-in convenience

*High voltage, high output versions are available
 Consult the factory for details

PHASESCOPE™ AM-3



PHASESCOPE™ — the complete tool for BTSC/MTS stereo audio applications. Real time monitoring of stereo audio phase, program average and peak levels, and third channel displays selectable between left/right SUM or SAP (second audio program) — all in one complete system.

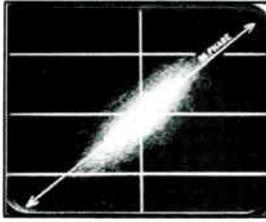
A quick glance by the operator gives a complete “picture” of the audio signal. Audio level monitoring, both PPM Peak and VU and the B & B SYSTEMS PHASESCOPE allows you to easily avoid out-of-phase stereo signal and prevent peak audio distortion.

FEATURES:

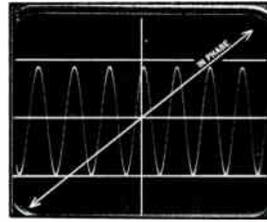
- B & B PHASESCOPE CRT X/Y display with calibrated graticule for phase and studio operating level.
- CRT display of individual channel levels, with calibrated graticule for studio operating level.
- ANSI calibrated VU meters and PPM Peak meters for each channel, and a third VU and PPM Peak meter, selectable for left/right, SUM or SAP — a B & B exclusive!
- Self-contained in only 4 EIA rack units.
- Magnetic and EMI/RF Shielding.

Creative tools for stereo audio.

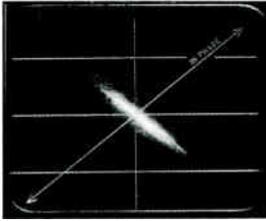
AM-3 PHASESCOPE™



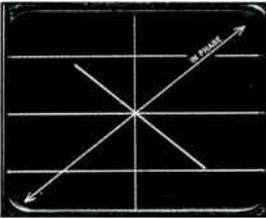
B & B PHASESCOPE, showing in-phase program material, with good stereo separation.



Single channel audio tone, ideal for level setting.



B & B PHASESCOPE, showing out-of-phase program material.



Out-of-phase tone — quickly detects phase errors in your system.

SPECIFICATIONS:

SIGNAL INPUTS —

AUDIO: Three pin XLR female for left and right audio and SUM/SAP audio. All inputs are balanced and buffered with greater than 50k ohm input impedance. Inputs can be set for resistive termination according to studio operating standards.

DISPLAY —

SCOPE: Oscilloscope display, bandwidth limited to audio frequencies of 20 Hz to 20k Hz. Vertical calibration can be adjusted so that graticule marking can conform to studio line level. Proper stereo phase relationship of left and right channels is marked diagonally on the graticule. Four mode switches select either CH-1 (left), CH-2 (right), X/Y (PHASESCOPE), or CH-3

(SUM/SAP) displays. A separate switch selects between SUM or SAP display for the CRT and the meters.

VU METERS: The VU meters meet all electrical and ballistic specifications established by the Bell Laboratories and ANSI 16.5-1954, as required by broadcasting and sound engineers.

LED PEAK METERS: Peak reading, full wave rectified, read both positive and negative peaks, 250 microsecond rise time; 300 millisecond fall time.

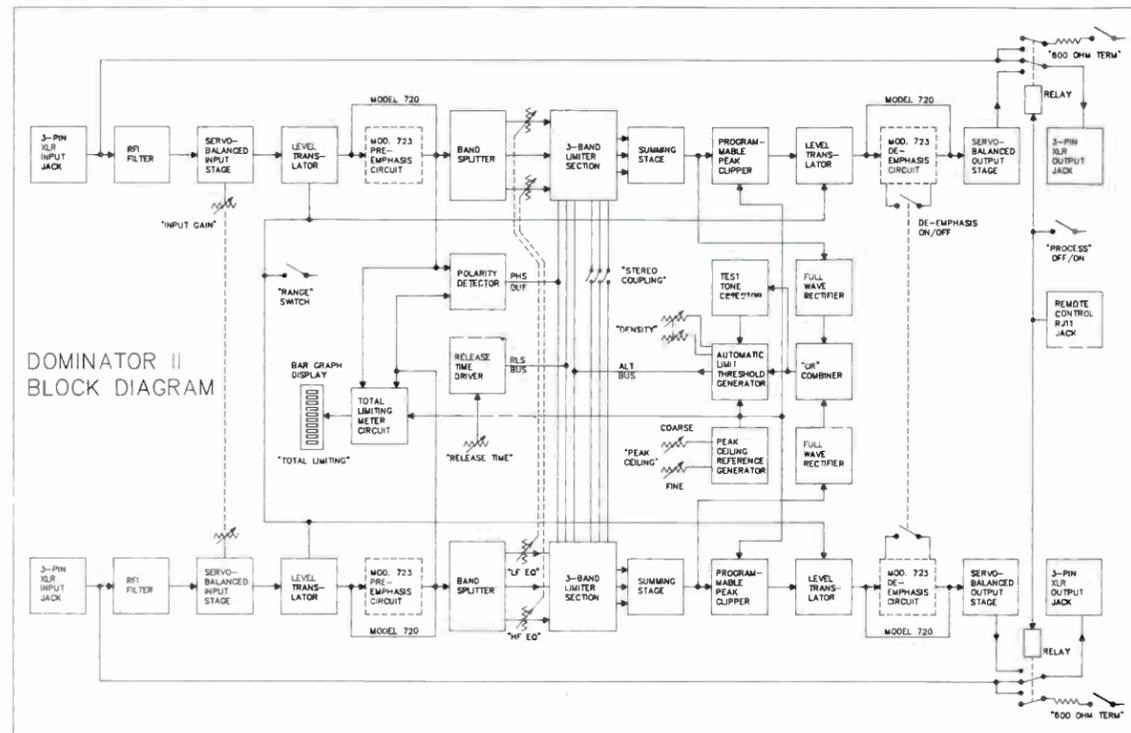
POWER — 115/220 VAC, 50/60 Hz, 75 Watts.

PHYSICAL — 7" x 19" Wide x 17" Deep, 4 EIA rack units, 25 Lbs. (11.4 Kilo).

Dominator™ II Models 720, 723

APHEX
SYSTEMS

Dominator™ II Precision MultiBand Peak Limiter Models 720, 723



AUDIO SPECIFICATIONS

RANGE SETTING	0dB	-10dB
Nominal Gain	0dB ±15dB	Same
Output Noise	-81dB	-89dBu
THD	<0.008%	<0.008%
SMPTE IMD	<0.008%	<0.008%
DIM	<0.008%	<0.008%
Frequency Response	±0.2dB 2Hz-75kHz	Same
Max Input (MIL)	+27dBu	+23dBu
Max Output (MOL)	+22dBu (RMS)*	+12dBu (RMS)*
Crosstalk	70dB up to 20kHz	Same
Dynamic Range	104dB	102dB

CONTROLS ADJUSTMENT RANGE

Input Gain	±15dB
LF EQ	±5dB
LF Crossover	100Hz/210Hz
HF EQ	±5dB
HF Crossover	1.7kHz/3.4kHz
Release Time	150mSec to 7Sec
Density	-5 to +5 RCH
Output Ceiling	-9 to +25dB (PK)**

I/O

Input Circuits	Servo Balanced Transformerless
Output Circuits	Servo Balanced Transformerless
Input Connectors	3-Pin XLR Female
Output Connectors	3-Pin XLR Male
Input Impedance	19.5k Ohms unterminated; 600 Ohms by Rear Panel Selectable Terminator- (Lifts in Bypass)
Output Impedance	65 Ohms
Input CMRR	Better than 60dB 20 Hz to 20kHz
Input RF Rejection	Better than 40dB at 800kHz, Better than 60dB Above 2MHz

MISCELLANEOUS

Power	120VAC 50/60Hz 30 Watts (100,220,240 options)
Power Fuse	100/120VAC = 0.375A (SLO); 220/240VAC = 0.25A (SLO)
Weight	5.6 Lbs. (2.54kg)
Dimensions	19" W x 1.75" H x 9.5" D (482.83mm x 44.42mm x 241.12mm)

*MOL is limited by the peak ceiling setting. The output stage is capable of +25dBu into 600 Ohms.

**dB (PK) = peak value of sine wave.

The Dominator II from Aphex Systems is a stereo multiband peak limiter designed to fit a wide range of audio applications. Through the use of multiband techniques along with new proprietary circuits, the audibility of limiting action has been greatly reduced, especially when compared to conventional limiters. This means that greater limiting depth is possible, resulting in higher loudness with maintained audio quality. At virtually any limiting depth, the Dominator II is free of "hole punching", "dullness", and most other effects normally associated with limiters. As a peak overshoot protection limiter, the Dominator II is undetectable in line while it absolutely prevents peak levels from exceeding a user settable output level. In addition, the desired limiting effects of greater audio density and increased "punch" are readily available with the Dominator II.

104dB Dynamic Range

Freedom from Pumping

Freedom from Spectral Gain Intermodulation

Automatic Limit Threshold (ALT)

Peak Ceiling Trimmable in 0.2dB Steps Over a 34dB Range

Adjustable Density (Relative Crest Height)

Switchable Crossover Frequencies

Detented Potentiometers

Relay Bypass, Remote Controllable

Servo-Balanced Transformerless Inputs and Outputs

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.

U.S. and Foreign Patents Pending.

Part No. 02-720-723-03 Printed in U.S.A.

Aphex Dominator II Precision MultiBand Peak Limiter Models 720, 723

Multiband vs. Wideband Processing

A very significant problem with **wideband** processing is "**spectral gain intermodulation**" which occurs when one part of the spectrum controls the level of another part. A typical situation is a vocalist being "sucked down" every time the kick drum hits.

Since most energy is contained in the lower frequencies, they tend to control the level of the entire spectrum. When the lower frequencies are above the limit threshold the higher frequencies are attenuated thus causing the output to be dull.

Multiband processing solves these problems by splitting the audio into two or more frequency bands and processing each band separately. However, more bands often result in many more parameters to control including a method of summing the bands together again. While giving the user flexibility, it also requires different settings for almost every different source.

The Dominator II uses **program dependent, intelligent circuits** to reduce the number of controls. The user, therefore, has flexibility to shape the sound while quickly and easily achieving the goal of consistent, effective limiting.

ALT (Automatic Limit Threshold)

A multiband processor splits the audio into separate bands, limits each band individually and then sums the bands together again. Even though each band's peak output is predictable, summing the bands together produces an unpredictable peak output.

One conventional approach to making the summed output predictable is to use a wideband limiter after the summing. This, however, introduces all the drawbacks of wideband limiting discussed above.

Another approach is to use a clipper on the summed output. This causes too much clipping distortion if the summed output is too high. In order to avoid this distortion the limiters' thresholds are set very far below the clipper threshold. The drawback is a loss of loudness and, due to the lower thresholds, much greater amount of processing.

The Dominator II uses a patented method to produce a predictable peak output while maintaining maximum loudness without audible distortion- the **Automatic Limit Threshold (ALT)**. The outputs of the three bands are summed and sent to the ALT detector circuit. If the sum exceeds a reference value, the ALT reduces the thresholds of the individual limiters. When the summed output falls below the reference value the limit thresholds return to their original setting.

The ALT circuit has a self-adjusting finite attack time. The amount of time it takes to lower the thresholds of the limiters is the length of time the limiters' overshoot may be in the clipper. The reference value of the ALT in relation to the clipper determines the depth of clipping.

Both parameters are set by the **DENSITY** control. When the DENSITY control is set higher, the ALT reference gets closer to clipping, and the attack time is slower, producing more clipping. The opposite occurs when DENSITY is set lower. The "**0 RCH**" position for the DENSITY control emulates the standard parameters of the original Studio Dominator model 700, and is recommended for general use.

It should be noted that there is only one ALT circuit controlling both channels equally. This provides global stereo balance and imaging by assuring that both channels always limit at the same threshold. This does cause an interaction if the Dominator II is used as two independent channels. Therefore, we do not recommend such a practice.

Model 723 Pre and De-emphasis

Pre-emphasis is an equalization curve expressed as a time value based on the ratio of a resistor and capacitor. The higher the value, the greater the equalization. It has been employed as a noise reduction technique for broadcast and transmission links.

There are primarily two world standards- **50 and 75 microseconds**. The Dominator II Model 723 has pre-emphasis (either 50 or 75 microsec) added after the input circuit and before the limiters. It has a complementary de-emphasis circuit (which may be switched out of circuit) after the final limiter and before the output stage.

When the **de-emphasis circuit** is in circuit the audio output of the Model 723 is flat if the input is below threshold. As the input increases above threshold the output takes the shape of the de-emphasis curve.

Applications

Sound Contracting -- protection of amplifiers and speakers from overload; increased loudness; maximized use of available power.

Recording -- preventing sudden peak overload of mixer or recorder; tightening tracks; special effects, etc.

Mixing -- used as a program limiter, the Dominator II will keep a track "rock steady" for "layering" into or on top of a mix.

Digital Sampling -- obtaining good full scale samples free from peak overload, i.e. no more missed samples.

Digital Recording -- insuring clean recording by stopping clipping of peaks and overshoots. Maximizes bit usage for less distortion.

Satellite Uplink -- Modulation control to prevent splattering on high frequency audio, gives reduced distortion, better signal-to- noise.

Broadcasting -- AM and FM modulation control for increased loudness; cleaner sound; use in production for greater consistency of tapes, punchier voiceovers.

Location Film Shoots -- anti-crash for dialog and sound effects recording.

Post Production -- Soundtrack peak control; managing difficult dialog; controlling transient sound effects.

Optical Recording & Transfer -- prevents "valve clash", gives higher average level with low distortion and better signal-to- noise performance.

Analog Disk Mastering -- peak control for high allowable average cutting levels; less limiter degradation to the program; brighter, punchier sound.

C/D Mastering -- peak and density control for more accurate digitizing, cleaner sound requiring less error correction on playback; no limiter induced sound degradation.

STL & Phone Line Driver -- maximize signal-to-noise without overload distortion.

Video and Audio Tape Duplication -- "Hotter" transfers without saturation.

