

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
THD:	Less than .01%
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

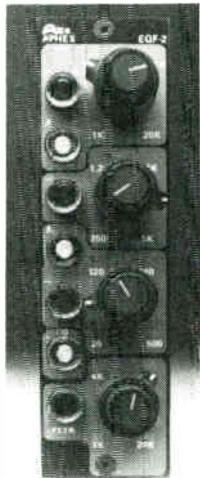
studio or live p.a. situation. The resulting sound is smooth and dense with an increase in perceived loudness and brightness.

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.

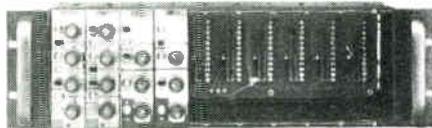


CX-1

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.



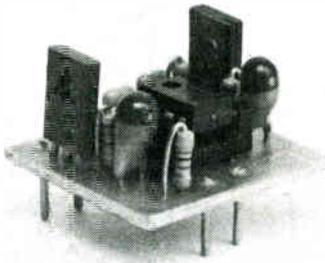
PS-1 \$275.00

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

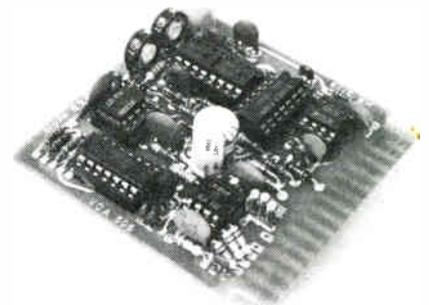


1537A VCA IC

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

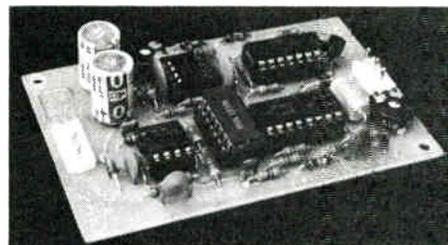
BANDWIDTH: DC to 50 MHz
THD: 0.004% TYP
IMD: 0.03% TYP
NOISE: –90 dBV worst case
MAX. ATTENUATION: >100 dB. DC – 200 kHz



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.

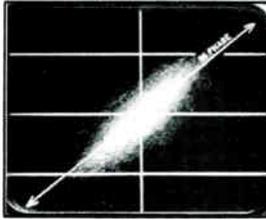
A quick glance by the operator gives a complete “picture” of the audio signal. Audio level monitoring, both PPM Peak and VU and the B & B SYSTEMS PHASESCOPE allows you to easily avoid out-of-phase stereo signal and prevent peak audio distortion.

FEATURES:

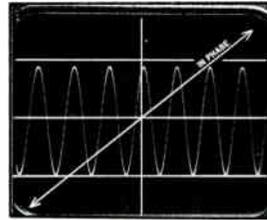
- B & B PHASESCOPE CRT X/Y display with calibrated graticule for phase and studio operating level.
- CRT display of individual channel levels, with calibrated graticule for studio operating level.
- ANSI calibrated VU meters and PPM Peak meters for each channel, and a third VU and PPM Peak meter, selectable 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.

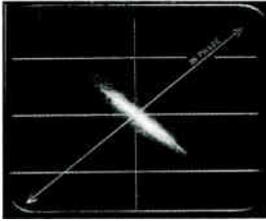
AM-3 PHASESCOPE™



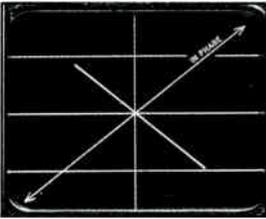
B & B PHASESCOPE, showing in-phase program material, with good stereo separation.



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.

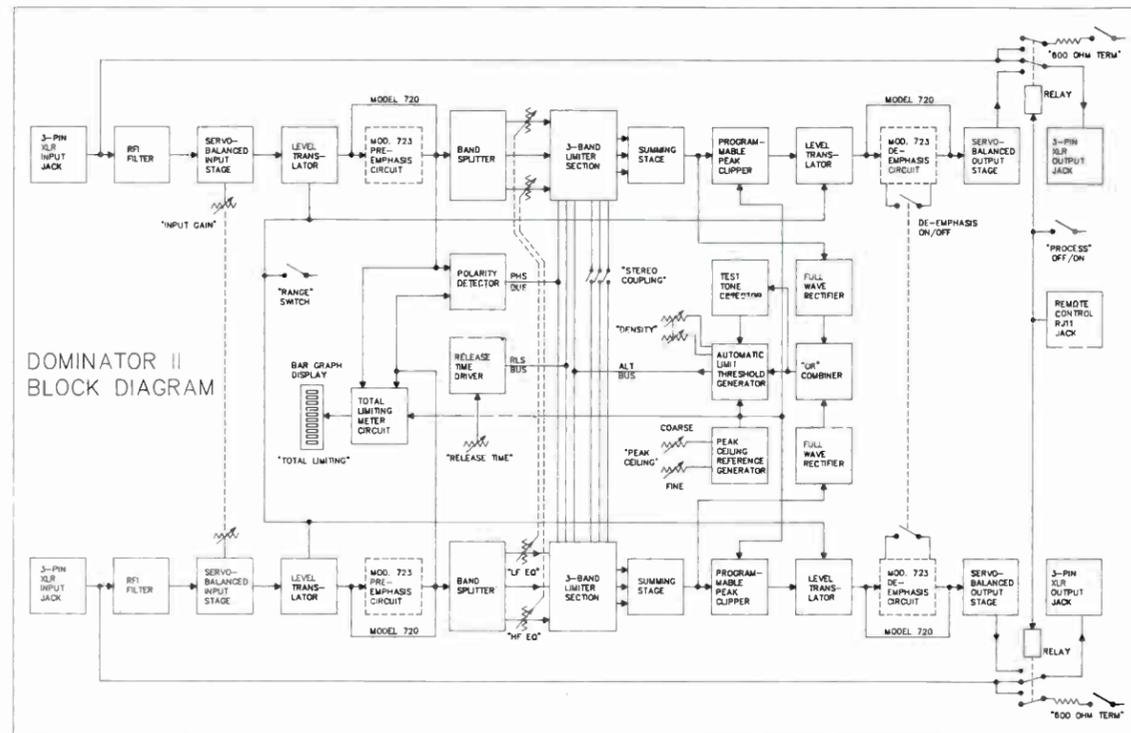
POWER — 115/220 VAC, 50/60 Hz, 75 Watts.

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 sinewave.

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.

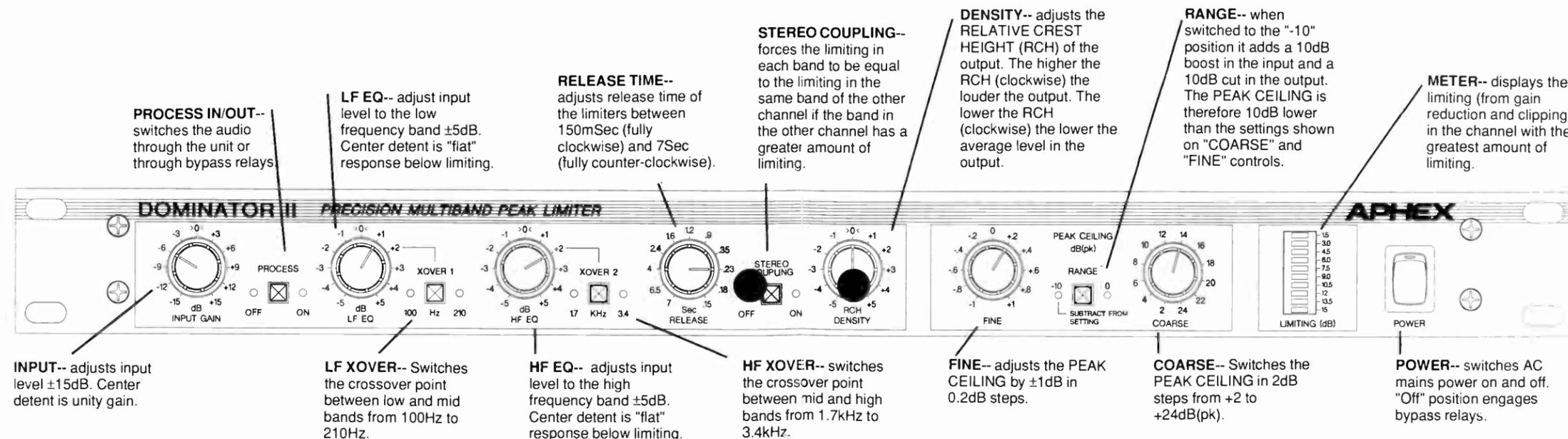
Optical Recording & Transfer -- prevents "valve clash", gives higher average level with low distortion and better signal-to- noise performance.

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.



SOLID STATE MODULAR ELECTRONICS FOR STUDIO 96

Two amplifiers, monaural RP110-R2 and stereo RP120-R2 match the Studio 96 FTRM, RM, ESM and RMQ configurations. These new Viking tape recording and playback amplifiers are completely transistorized and incorporate the latest modular design concepts. RP110-R2 and RP120-R2 are electrically interlocked with the Studio 96. Either amplifier exceeds NAB standards and records and plays tapes of highest professional quality.

Solid state circuitry on etched, glass epoxy plug-in boards provide an exceptionally clean amplifier layout. Two inputs (per channel) for line and microphone are provided on the rear panel with readily interchangeable accessory plug-in modules and separate controls for mixing. Other features include two speed equalization switch, "A-B" monitor switch, head phone jack, illuminated ASA standard precision VU meters and illuminated record pushbuttons. Connecting cables for Studio 96 are included.

AMPLIFIER SPECIFICATIONS

FREQUENCY RESPONSE:
30-16,000 CPS ± 2DB at 7-1/2 IPS.
30-10,000 CPS ± 2DB at 3-3/4 IPS.

SIGNAL-TO-NOISE RATIO:
55DB or better below peak recording level at 7-1/2 IPS.

OUTPUTS: (PER CHANNEL)
Balanced +4 VU into 600 ohm load. Connectors; type XL-3 male.
Head Phone Jack - 600 ohm nominal.

INPUTS: (PER CHANNEL)
1) High level: Unbalanced bridging, 150 K ohm impedance, 100 MV sensitivity.
2) Low level: High impedance unbalanced microphone, 200 K ohm 1MV sensitivity.
Connectors; type XL-3 female.

DISTORTION:
1% total harmonic distortion, record/play at 1,000 CPS at 7-1/2 IPS at 0 VU.

EQUALIZATION: NAB and EIA standard.

RECORD INTERLOCK: Relay controlled.

BIAS/ERASE OSCILLATOR:
100 KC High-Q Low distortion push-pull solid state circuit. Adjustment at rear panel.

CONTROLS:
Separate controls for Play, both inputs (per channel), equalization, Record level, Monitor, Sound-on-sound on RP120 only.

INTERNAL TRIMMING ADJUSTMENTS:
Play equalization; record level; bias trap.

HEADS:
Supplied adjusted for half track optimum heads.

CIRCUITRY: Completely solid state.

POWER:
110-120V AC 50/60 cycle; 20 watts maximum. Fuse - 0.5A, slow blow line fuse; Receptacle - switched AC for transport; Cord - supplied with 6 ft. removable AC cord.

DIMENSIONS:
Standard EIA rack mount panel. Height 5-1/4"; Width 19"; Depth 8" behind panel (allow 3" additional for connectors). 3/4" in front of panel.

PANEL FINISH: Hammertone Grey

WEIGHT: 16 lbs. net. 20 lbs. in shipping carton.

OPTIONS AND ACCESSORIES

EQUALIZATION:
Option # E1 - Factory adjusted for 1-7/8 and 3-3/4 IPS.
Option # E2 - Factory adjusted for 7-1/2 and 15 IPS.

OUTPUT LINE:
Option # L1 - Factory set, 150 to 250 ohm balanced line output, +4 VU nominal.

HEAD ADJUSTMENT:
Option # H1 - Factory adjusted for full track optimum heads on RP110-R2 only.
Option # H2 - Factory adjusted for quarter track stereo optimum heads on RP120-R2 only.

POWER:
Option # V2 - 220 to 240 V AC 50/60 cycle.

PLUG-IN INPUT MODULES: Each input (2 per channel) accepts any one of the plug-in accessories.

Accessory # P1 - (One per channel supplied on standard amplifiers). Unbalanced bridging 150 K ohm, 100 MV sensitivity.

Accessory # P2 - Balanced bridging 10 K ohm, transformer isolated for 150 to 600 ohm lines -20 DBM to +10 DBM.

Accessory # P3 - (One per channel supplied on standard amplifiers). High impedance unbalanced microphone, 200 K ohm 1 MV sensitivity.

Accessory # P4 - Low impedance balanced microphone, 50 to 250 ohm, -70 to -30 DBM.

Special interconnection for synchronizing the bias oscillators in two amplifiers for multiple channel operations is optional.

ORDERING INFORMATION AND PRICES

Please read all specifications carefully. If any options or accessories are required specify these clearly when ordering.

STANDARD RP 110 - R2 Price \$299.00
STANDARD RP 120 - R2 Price \$399.00

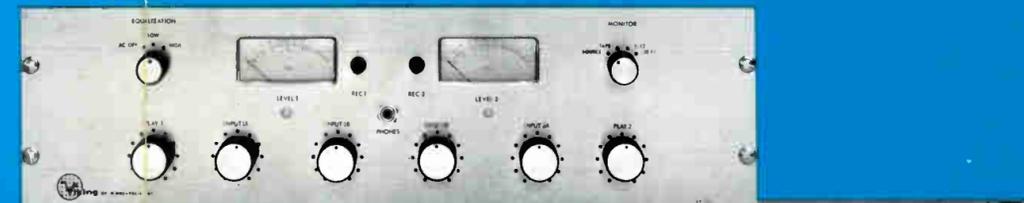
If other than standard, specify with order:

EQUALIZATION # E1 or # E2; OUTPUT LINE # L1;
HEAD ADJUSTMENT # H1 or # H2; POWER # V2. NO EXTRA COST
ACCESSORY PLUG-IN INPUT MODULES # P1 ADD \$ 2.00 PER INPUT
P2 ADD \$23.50 PER INPUT
P3 ADD \$16.00 PER INPUT
P4 ADD \$30.00 PER INPUT

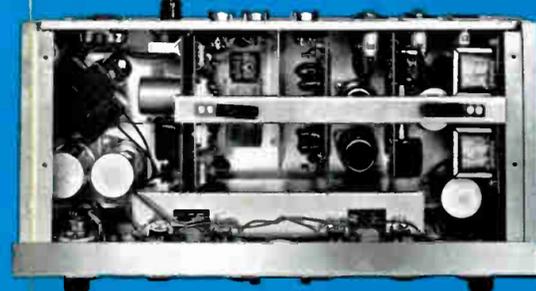
Factory synchronized bias oscillator connections in two amplifiers Price \$10.00



MONAURAL RP 110-R2 - FRONT AND REAR VIEW



STEREO RP 120-R2 - FRONT, REAR AND TOP VIEW



INPUT MODULES



Specifications and prices listed herein are subject to change without notice.

VIKING tape recorders
DIVISION OF THE TELEX CORPORATION
9600 Aldrich Avenue South Minneapolis, Minnesota, 55420



PROFESSIONAL TAPE TRANSPORT NOW ALSO AVAILABLE WITH SOLID-STATE MONAURAL OR STEREO ELECTRONICS

The Studio 96 is a heavy duty tape transport for broadcasting, commercial and other critical recording applications - reasonably priced to accommodate budget limitations. Excellent tape handling and exceptionally good flutter and wow characteristics won acclaim for the Studio 96 in every field. Head configurations in full, half or quarter track make the Studio 96 adaptable for most professional applications. Other features include 10 1/2" reel capacity, automatic sequence function, dynamic braking, two speed hysteresis synchronous capstan motor and heavy duty reel drive motors, remote control receptacle and EIA rack panel. Separate, solid state record and playback amplifiers, monaural model RP110-R2 and stereo RP120-R2 are matched to the Studio 96.

VIKING
tape recorders
A DIVISION OF THE
TELEX CORPORATION

STUDIO 96 DESIGN FEATURES

CONTROLS: Four telephone-type lever or "key" switches; "Reel Size Selector," "Speed Selector," "Play-Cue" and "Fast Forward-Stop-Rewind".

AUTOMATIC SEQUENCE FUNCTIONS: Time delay circuits provide complete interlock protection for foolproof operation. For example, the "Play" switch may be engaged while the unit is in "Rewind." After stopping Rewind the control system will automatically follow through; the unit will come to a dead stop before going into "Play" without damage to the tape.

CUING: With the selector switch set to "Cue" all brakes are released allowing manual rotation of the reels for cuing or editing purposes. Tape lifters retract for perfect tape-to-head contact.

PLUG-IN CONTROL BOX: All control relays are contained in a "plug-in" control box which can be quickly exchanged. A spare control box eliminates the need for a stand-by transport.

REMOTE CONTROL: Every Studio 96 is equipped with a receptacle to remote control "Play-Stop" and "Fast Forward-Stop-Rewind." This can be accomplished with simple, external switching. A second receptacle permits electrical interlocking with external electronics.

DRIVE SYSTEM: The excellent drive mechanism of every Studio 96 uses three motors with adjustable power control circuits for each particular function.

CAPSTAN: A two-speed, hysteresis synchronous motor drives the 3½ pound dynamically balanced capstan flywheel with flutter absorbing belts.

TAKEUP AND REWIND: Six pole, induction motors drive the takeup and supply reels. A special circuit provides unusually smooth tape starting by momentarily applying over two times the torque required for normal running.

BRAKES: Maintenance free, dynamic braking with automatic differential and directional memory, provides exceptionally smooth tape handling. The front panel "Reel-Size" switch selects proper tape tension and the dynamic braking differential for the 3 reel sizes. These highly efficient brakes require less than 2 seconds from "Fast Forward" to "Stop," or "Rewind" to "Stop."

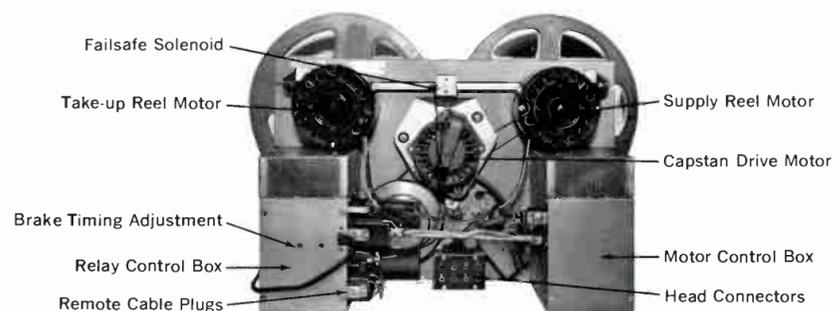
FAIL SAFE: A solenoid controlled, mechanical brake stops the transport in the event of power failure.

REEL MOUNTINGS: Universal NAB hubs accept 10½ inch reels and retract to mount standard 7 and 5 inch reels. Precision machined aluminum reel retainers are included.

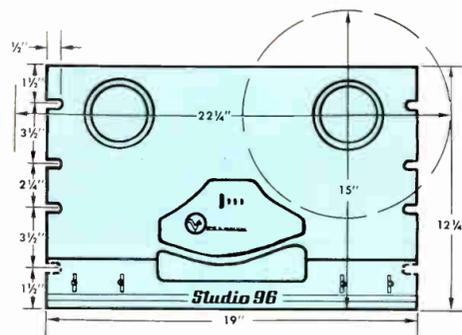
TAPE SPEEDS: Select either of two adjacent speeds electrically: 15 and 7-1/2, 7-1/2 and 3-3/4 or 3-3/4 and 1-7/8 ips, depending upon the drive pulley provided. Drive pulleys are interchangeable and may be purchased and installed as required.

POWER REQUIREMENTS: The standard Studio 96 is designed for 117 volt 60 cycle operation. Studio 96 is also available for either, 117 volt 50 cycle or 230 volt 50 cycle operation with proper capstan motor pulley and capacitors. For 50 cycle operation in high ambient temperatures, or where normal ventilation is restricted, an additional cooling fan is recommended — available at extra cost. Studio 96 for 230 volt 50 cycle operation comes with external step-down transformer at extra cost.

TAPE BREAK AND FAIL SAFE SWITCH: A photo-electric fail safe device automatically stops the transport in the event that tape breaks or runs out. Transparent or semi-transparent tape sections can be used between selections for fast cuing. Jump programming and automatic cuing are also possible with minor control modifications.

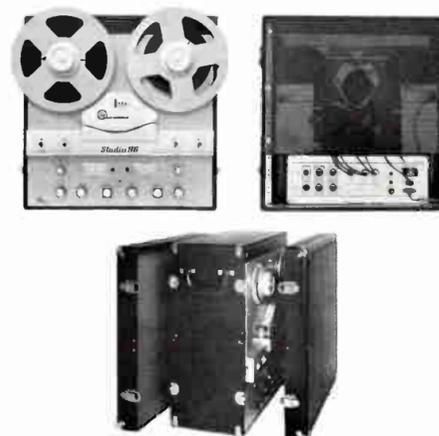


INSTALLATION DIMENSIONS



PORTABLE CASE

Where portability is desired the Studio 96 and either a monaural RP110-R2 or stereo RP120-R2 amplifier is installed in a wood case covered in attractive black vinyl. The case comes with detachable covers at front and back for convenient accessibility to operating controls and input or output connections. Screened filler panels provide ample ventilation for the installed equipment. **Dimensions with covers:** 20" wide, 20" high, 12½" deep. **Weight of case only:** 20½ lbs. **With equipment:** 88 lbs. maximum.



The Studio 96 is designed for standard EIA relay rack mounting in vertical or horizontal position.

Dimensions: 19" x 12¼" clearance. With 10½" reels in place, 22¼" x 15" clearance.

Front: 2" clearance. **Behind panel:** 7" clearance.

Access must be provided for connection to head jacks, AC, and remote control connectors located behind the panel. In recording applications the amplifiers should be located below the transport. The cable length from the head jacks on the back of the transport to the amplifiers should not be more than two feet.

For portability order case model # 100.

STUDIO 96 SPECIFICATIONS

SIGNAL-TO-NOISE RATIO: 55 db below peak recording level at 7.5 ips.

FLUTTER AND WOW: Less than 0.1% RMS at 15 ips, 0.1% at 7.5 ips.

LONG TERM SPEED REGULATION: 0.5%

CAPSTAN DRIVE: Flutter-filter, multiple-belt drive.

CAPSTAN FLYWHEEL: Three and one-half pound, dynamically balanced.

TAPE SPEED: 15 - 7-1/2, 7-1/2 - 3-3/4, 3-3/4 - 1-7/8 ips.

REEL SIZE: 10-1/2 inches and all smaller.

CAPSTAN DRIVE MOTOR: Hysteresis synchronous.

CAPSTAN BEARINGS: Self-lubricating, no lubrication required.

MOTORS, REWIND AND FAST FORWARD: 6-pole.

POWER REQUIREMENTS: 117 volt 60 cycle, 150 watts nominal. 117 volt 50 cycle or 230 volt 50 cycle optional. (see "Options" and "Design Features").

FAST FORWARD OR REWIND TIME: 2400 foot reel, 70 seconds.

COUNTER: Three digit, resettable.

BRAKES: Direct-current dynamic, plus solenoid-operated fail safe mechanical brake.

CONTROLS: Interlocked relay and solenoid. Lever switch operated.

PANEL FINISH: Hammertone grey.

WEIGHT: 50 pounds (shipping weight 56 pounds).

HEAD CONFIGURATIONS

The Studio 96 accepts up to four heads in various configurations. Heads are metal faced with laminated cores, of hyperbolic contour and require no pressure pads. The tape is in contact with the heads only in "play" or "cue" mode. To prolong the life of heads and to avoid head wear tape lifters remove the tape from the heads during fast forward or rewind modes.

Only the FTRM, RM, ESM and RMQ low impedance head configurations shown below match the RP110-R2 and RP120-R2 solid state amplifiers.

HEAD CONFIGURATION	TAPE MOTION				PRICES OF STUDIO 96
	PHOTO-CELL	4	3	2	
96FTRM Full Track Erase, Record, Play or Monitor					624.95
96RM Half track mono Erase, Record, Play or Monitor					585.45
96ESM Half track stereo Erase, Record, Play or Monitor					605.45
96RMQ Quarter track stereo Erase, Record, Play or Monitor					598.95

While the low impedance configurations shown above are considered standard the Studio 96 may be ordered with any desired selection of heads (up to four head positions) in either high impedance for vacuum tube electronics or low impedance for solid state electronics. Additional suggested configurations are shown at right (not compatible with RP110-R2 or RP120-R2 amplifiers). When so purchased, the overall price is the accumulative total of the Studio 96 transport plus the cost of the selected heads. Viking equipment is sold only with heads.

ORDERING INFORMATION

To avoid delays when ordering equipment please specify accurately.

- (1) Head configuration and impedance.
- (2) Tape speeds.
- (3) Required power voltage and cycles.
- (4) All desired options and accessories for RP110-R2 or RP120-R2 amplifiers.
- (5) When ordering portable case only, specify optional screen filler panel sizes.

PRICES OF OPTIONS AND ACCESSORIES

Optional 117 volt 50 cycle operation—specify with order. No Extra Cost
 Optional 230 volt 50 cycle operation, step-down transformer included. Add \$18.50
 Optional Venturi Fan for 50 cycle operation Price \$34.95
 Portable case #100 (screen filler panels included when ordered with equipment) Price \$59.50
 On orders without equipment, filler panels extra. Add \$3.00

SUGGESTED CONFIGURATIONS

96 FTR Full Track Erase, Record/Play \$589.95



96 P Half Track Mono Play \$577.95



96 R Half Track Mono Erase, Record/Play \$565.95



96 BE Half Track Erase, Record/Play Track Two, Play Track One \$585.45



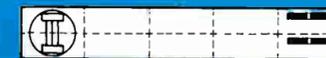
96 EB Half Track Two Channel Erase, Record/Play \$589.95



96 ES Half Track Stereo Erase, Record/Play \$577.95



96 Q Quarter Track Stereo Play \$563.95



96 HQ Quarter Track Stereo Erase, Record/Play \$576.95



96 EQQ Four Channel - Staggered Quarter Track - Erase, Record/Play \$612.95



96 QQR Four Channel Simultaneous Erase, Record, Play-Or-Monitor \$765.95



WTFM — New York, after two years of direct broadcasting from New York World Fair Grounds — Viking Studio 96 transports are now installed permanently in mid Manhattan WTFM studio.

AUDIO

equipment profile
 November 1965
 From Report on Studio 96 and RP 120 Amplifier . . .
 Complete reprint available on request from Viking.

... the transport/preamplifier performed as easily and as surely as the most fussy user could require . . . What the specifications fail to tell, and our physical examination did, is that these units are built to last . . . These Viking units show every evidence to the effect that down time will be a rarity. Further, the units are readily serviceable. Add, to this the fact that our ears fully agree with that which our instruments have found. The net result is a pair of units that have every right to that much abused word "professional."



Studio 96 and RP120 amplifier at Bauer Audio-Video of Dallas, recording narration, music and sound effects for film strips — keying for automatic slide projection . . .



WAYL — Minneapolis, moved to new quarters, boasting 50,000 watt power, 400' tower, new Studio 96 tape transports and RP 120 amplifiers for multiplex broadcasts.

SOLID STATE MODULAR ELECTRONICS FOR MODEL 230

Two amplifiers, monaural RP 110 and stereo RP 120 match the model 230 FTRM, RM, ESM, RMQ and QQRM configurations. These new Viking tape recording and playback amplifiers are completely transistorized and incorporate the latest modular design concepts. RP 110 and RP 120 are electrically interlocked with the 230. Either amplifier exceeds NAB standards and records and plays tapes of highest professional quality.

Solid state circuitry on etched, glass epoxy plug-in boards provide an exceptionally clean amplifier layout. Two inputs (per channel) for line and microphone are provided on the rear panel with readily interchangeable accessory plug-in modules and separate controls for mixing. Other features include two speed equalization switch, "A-B" monitor switch, head phone jack, illuminated ASA standard precision VU meters and illuminated record pushbuttons. Connecting cables for model 230 are included.

*Requires two RP 120 for simultaneous four channel operation.

AMPLIFIER SPECIFICATIONS

FREQUENCY RESPONSE:
30-16,000 Hz±2DB at 7-1/2 IPS
30-10,000 Hz±2DB at 3-3/4 IPS

SIGNAL-TO-NOISE RATIO:
55DB or better below peak recording level at 7-1/2 IPS.

OUTPUTS: (PER CHANNEL)
Balanced +4 VU into 600 ohm load. Connectors, type XL-3 male
Head Phone Jack - 600 ohm nominal.

INPUTS: (PER CHANNEL)
1) High level: Unbalanced bridging, 150 K ohm impedance, 100 MV sensitivity.
2) Low level: High impedance unbalanced microphone, 200 K ohm 1MV sensitivity.
Connectors, type XL-3 female

DISTORTION:
1% total harmonic distortion, record/play at 1,000 Hz at 7-1/2 IPS at 0 VU.

EQUALIZATION: NAB and EIA standard.

RECORD INTERLOCK: Relay controlled.

BIAS/ERASE OSCILLATOR:
100 KC High-Q Low distortion push-pull solid state circuit. Adjustment at rear panel.

CONTROLS:
Separate controls for Play, both inputs (per channel), Equalization, Record level, Monitor, Sound-on-sound on RP120 only.

INTERNAL TRIMMING ADJUSTMENTS:
Play equalization, record level, bias trap.

HEADS:
Supplied adjusted for half track optimum heads.

CIRCUITRY: Completely solid state.

POWER:
110-120V AC 50/60 Hz; 20 watts maximum. Fuse 0.5A, slow blow line fuse; Receptacle - switched AC for transport; Cord - supplied with 6 ft. removable AC cord.

DIMENSIONS:
Standard EIA rack mount panel. Height 5-1/4"; Width 19"; Depth 8" behind panel (allow 3" additional for connectors); 3/4" in front of panel.

PANEL FINISH: Stainless Steel.

WEIGHT: 16 lbs. net. 20 lbs. in shipping carton.

*OPTIONS AND ACCESSORIES

EQUALIZATION:
Option # E1 - Factory adjusted for 1-7/8 and 3-3/4 IPS.
Option # E2 - Factory adjusted for 7-1/2 and 15 IPS.

OUTPUT LINE:
Option # L1 - Factory set, 150 to 250 ohm balanced line output, +4 VU nominal.

HEAD ADJUSTMENT:
Option # H1 - Factory adjusted for full track optimum heads on RP 110 only.
Option # H2 - Factory adjusted for quarter track stereo optimum heads on RP 120 only.

POWER:
Option # V2 - 220 to 240 V AC 50/60 Hz.

PLUG-IN INPUT MODULES: Each input (2 per channel) accepts any one of the plug-in accessory options.

Accessory # P1 - (One per channel supplied on standard amplifiers). Unbalanced bridging 150 K ohm, 100 MV sensitivity.

Accessory # P2 - Balanced bridging 10 K ohm, transformer isolated for 150 to 600 ohm lines -20 DBM to +10 DBM.

Accessory # P3 - (One per channel supplied on standard amplifiers). High impedance unbalanced microphone, 200 K ohm 1 MV sensitivity.

Accessory # P4 - Low impedance balanced microphone, 50 to 250 ohm, -70 to -30 DBM.

Special interconnection for synchronizing the bias oscillators in two amplifiers for multiple channel operations is optional.

ORDERING INFORMATION AND PRICES

Please read all specifications carefully. If any options or accessories are required specify these clearly when ordering.

STANDARD RP 110 Price \$299.00
STANDARD RP 120 Price \$399.00

If other than standard, specify with order:

EQUALIZATION #E1 or #E2; OUTPUT LINE #L1;	NO EXTRA COST
HEAD ADJUSTMENT #H1 or #H2; POWER #V2	ADD \$ 2.00 PER INPUT
ACCESSORY PLUG-IN INPUT MODULES #P1	ADD \$23.50 PER INPUT
#P2	ADD \$16.00 PER INPUT
#P3	ADD \$30.00 PER INPUT
#P4	

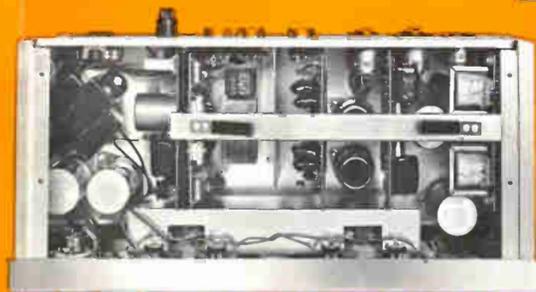
Factory synchronized bias oscillator connections in two amplifiers Price each \$10.00



MONAURAL RP 110 - FRONT AND REAR VIEW



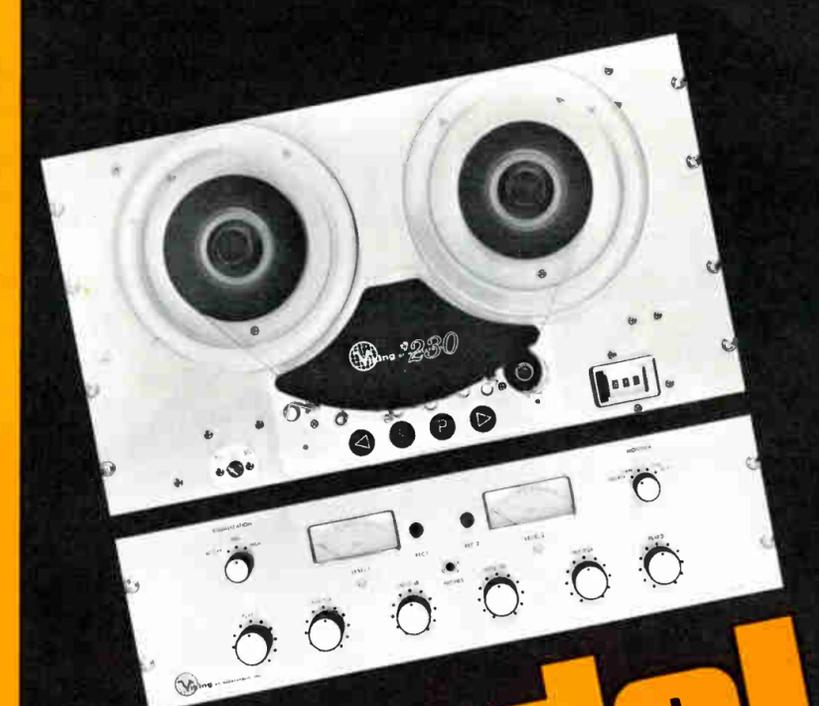
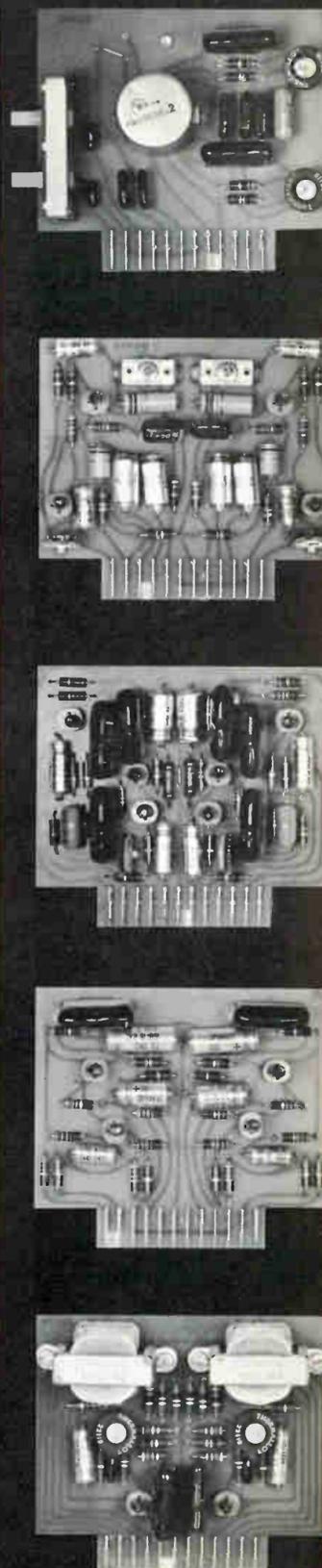
STEREO RP 120 - FRONT, REAR AND TOP VIEW



INPUT MODULES

Specifications and prices listed herein are subject to change without notice.

VIKING tape recorders
DIVISION OF THE TELEX CORPORATION
9600 Aldrich Avenue South Minneapolis, Minnesota, 55420



Model 230

Model 230 tape transports are designed for today's advanced technology in industry, business, research or education; and numerous installations attest to their rugged reliability. These tape transports operate in remote controlled language laboratories and sophisticated home music systems, are used as monitors of radio broadcasts and in aviation or law enforcement communication centers. They record programs for delayed broadcasting and play in background music installations. Viking model 230 transports record and reproduce scientific and medical data, operate animated displays, record inventories or serve in dictation-transcription centers.

A heavy duty three motor tape transport, the model 230 is ideally suited for all remote controlled and automatic applications. A variety of head configurations and interchangeable head block assemblies, plus other optional features make it a highly versatile unit. New solid state modular amplifiers, monaural model RP 110 and stereo model RP 120 match 230 tape transports in dependability and design.

VIKING
tape recorders
A DIVISION OF THE
TELEX CORPORATION



MODEL 230 FRONT VIEW



REMOTE CONTROL ASSEMBLY



MODEL 230 REAR VIEW

DESIGN FEATURES

Simple, convenient operation is the result of thoroughly practical design features in the model 230. It is entirely relay and solenoid controlled and operated by momentary electric push-buttons. It can be mounted vertically, horizontally or in any intermediate position. Model 230 features a standard 19" wide, stainless steel front panel. Other options, accessories, head configurations and amplifiers make the model 230 adaptable to a multitude of applications.

REMOTE CONTROL

Tape motions can be remote controlled with the accessory, momentary push-button remote control, connected at the back of the unit. The remote control is supplied with two connector plugs (less cable) to be fitted with cables of up to 500 feet.

AUTOMATIC FUNCTIONS

Equipped with single photo electric run-out sensor, the tape transport automatically stops if the tape runs out or should break. With transparent tape spliced into the leaders, this also permits captive tape operations in which the tape never runs off the reels.

Model 230 ordered with two optional photo electric sensors includes a Re-Cue/Cycle switch providing either automatic re-cueing to the beginning of the tape or automatic continuous cycling of the tape. The second photo sensor occupies the no. 1 head position (see head configurations).

DRIVE SYSTEM AND MOTORS

The capstan is belt driven using the Viking "flutter filter" belt system. For reliable, smooth tape handling model 230 employs three motors. Each reel is driven by a four-pole induction motor, providing uniform tape tension in all modes. Standard models 230 have a two speed hysteresis synchronous motor for long term speed regulation independent of line voltage.

TAPE SPEEDS

Model 230 provides a choice of 1 7/8 and 3 3/4 or 3 3/4 and 7 1/2, or 7 1/2 and 15 IPS, and is equipped with a speed selector switch.

COUNTER

A three digit, resettable counter is belt driven off the take-up reel spindle.

TAPE LIFTERS

Mechanical tape lifters separate the tape from the heads during fast-forward and rewind modes to avoid head wear and "chatter".

BRAKE SYSTEM

High efficiency is attained with the Model 230 brake system providing instantaneous stop from play mode; two seconds from fast forward or rewind. This solenoid actuated, self energizing common brake system is fail safe and provides differential braking under all operating conditions, including power failure.

POWER SUPPLY

A built-in 24 volt dc, full wave, one ampere power supply is included in all standard 230 tape transports. Model 230 is also available without the built-in power supply for applications where several transports use a common power supply control as in a language laboratory.

SERVICE AND MAINTENANCE

Model 230 is designed for easy service and maintenance. All assemblies are accessible from the back. The power assembly, connected through a single standard plug connector, is easily removed. Wiring connections of the control assembly are through a standard connector, screw terminals and wire nuts. Relays are of the plug-in type, with removable covers. The entire head block assembly is removable and interchangeable.

PORTABLE CASE

Where portability is desired Model 230 and either a monaural RP 110 or stereo RP 120 amplifier is installed in a wood case covered in attractive black vinyl. The case comes with detachable covers at front and back for convenient accessibility to operating controls, input or output connections. Screened filler panels provide ample ventilation for the installed equipment.

CUSTOMIZING

Model 230 is one of the most versatile tape transports and, for quantity orders, can be modified by Viking to fit many special applications. Volume users may consult the factory for quotations on custom made model 230 transports without obligation.



HEAD BLOCK WITH SINGLE PHOTO ELECTRIC RUN-OUT SENSOR



FRONT, BACK AND SIDE VIEW OF 230 WITH RP 120 IN PORTABLE CASE "100".



HEAD BLOCK ASSEMBLY

The 230 tape transport is designed for hyperbolic heads without pressure pads. All models 230 are equipped with a unitized head block assembly which may be interchanged or replaced. Heads are pre-aligned and azimuthed on these assemblies and connect through a jack panel. The head block assembly provides four positions. The no. 1 position is normally fitted with a magnetic head except on models equipped with a second photo sensor. If the model 230 is to be operated with more than one type of head (half track and quarter track for example), interchangeable head assemblies are recommended. A single transport can thus be used for varied applications.

STANDARD HEAD CONFIGURATIONS

Only the FTRM, RM, ESM, RMQ and QQR* low impedance head configurations shown below are standard and match the RP 110 and RP 120 solid state amplifiers.

CONFIGURATION	TAPE MOTION				WITH BASIC TRANSPORT	ADDITIONAL HEAD BLOCK ASSEMBLIES
	PHOTO-CELL	HEAD POSITIONS: 4	3	2		
230 FTRM Full Track, Erase, Record, Play-Or-Monitor					\$444.70	\$125.50
230 RM Half Track, Mono Erase, Record, Play-Or-Monitor					\$421.20	\$86.50
230 ESM Half Track Stereo Erase, Record, Play-Or-Monitor					\$442.40	\$113.25
230 RMQ Quarter Track Stereo Erase, Record, Play-Or-Monitor					\$433.70	\$99.50
230 QQR* * Four Channel Simultaneous Erase, Record, Play-Or-Monitor					\$603.40	\$265.50

The head configurations shown above are also available in high impedance for vacuum tube electronics at additional cost.

*Requires two RP 120 for simultaneous four channel operation.

SUGGESTED OPTIONAL CONFIGURATIONS

Not compatible with RP 110 or RP 120. Available in low or high impedance. Prices shown apply to low impedance configurations.

230 P Half Track Mono Play \$396.45



230 R Half Track Mono Erase, Record/Play \$401.70



230 Q Quarter Track Stereo Play \$399.30



230 EQQ Four Channel - Staggered Quarter Track - Erase, Record/Play \$448.30

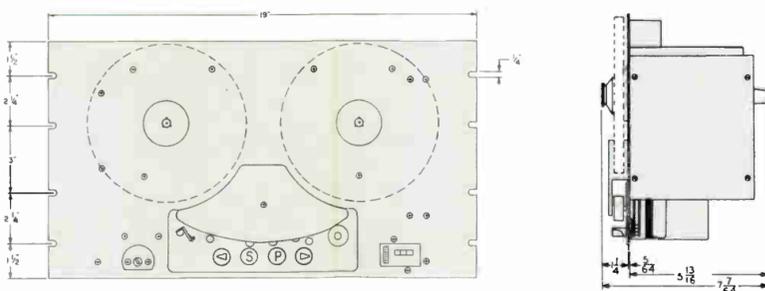


SPECIFICATIONS

TAPE SPEED: Two speed for 1-7/8 and 3-3/4, or 3-3/4 and 7-1/2, or 7-1/2 and 15 ips available.
CAPSTAN DRIVE: Flutter-filter belt drive.
CAPSTAN FLYWHEEL: 2 lbs., dynamically balanced.
CAPSTAN AND REEL BEARING: Oil impregnated bronze, no lubrication required.
FLUTTER AND WOW: 0.2% RMS at 7.5 IPS.
LONG TERM SPEED REGULATION: 0.5%
CAPSTAN DRIVE MOTOR: Two speed hysteresis synchronous motor available in 115 V 60 Hz, 230 V 50 Hz or 230 V 60 Hz optional at extra cost.
SPOOLING MOTORS: Standard 4-pole induction motors 115 V 50/60 Hz. Units ordered for 230 V operation are equipped with 230 V 50/60 Hz spooling motors.
BRAKE: Differential balanced braking, self energizing in the event of power failure. Stop 0.2 sec. from play mode; 2 sec. from fast forward or rewind.

REEL SIZE: 7 inches maximum.
FAST FORWARD OR REWIND: 1200 ft. reel, 45 sec.
HEADS: Laminated, hyperbolic-ground, no pressure pads required. Head complements: four heads maximum, three heads with two photo-electric sensors.
POWER SUPPLY: 24 volt d.c., full wave, one ampere.
CONTROLS: Momentary push-button relay; Rewind, Stop, Play, Fast Forward.
POWER REQUIREMENT: 115V 60 Hz, 150 watts maximum.
DIMENSIONS: 19" wide x 10-1/2" high x 6" deep behind panel, 8" overall depth.
WEIGHT: 22 lbs.
PANEL FINISH: Stainless steel.
PORTABLE CASE: Removable front and back covers; carrying handles on each side. Dimensions with covers: 20" wide, 20" high, 12-1/2" deep. Weight of case only: 20-1/2 lbs. With equipment: 65 lbs. maximum.

DIMENSIONS



MODEL 230 DIMENSIONS

ORDERING INFORMATION

The price is the accumulative total of the basic transport plus the cost of the selected head configuration.

To avoid delays when ordering equipment please specify accurately:

- 1) Head Configuration and Impedance.
- 2) Tape Speeds.
- 3) Required Power Voltage and Cycles.
- 4) Two photo cells if required.
- 5) Accessory Remote Control.
- 6) All Desired Options on RP 110 or RP 120 Amplifiers.
- 7) When ordering portable case only, specify optional screen filler panel sizes.

OPTIONS AND ACCESSORY PRICES

Power Options: 115V 50Hz Add \$10.00
 230V 50Hz Add \$10.00
 230V 60Hz Add \$10.00
Tape Speeds: Specify 1 7/8 - 3 3/4, or 3 3/4 - 7 1/2, or 7 1/2 - 15 ips No Extra Cost
Two Photo Cell with Re-Cue/Cycle Switch (occupies # 1 head position) Add \$17.05
RC23 Accessory Remote Control (connector plugs supplied less cable) Price \$38.00
Portable Case # 100 (screened filler panels included when ordered with equipment) Price \$59.50
 On orders without equipment, filler panels extra Add \$ 3.00

If 24V dc power supply is not required deduct \$13.45.