SCAMP S 02 Microphone Pre-Amp

- ★ **TRANSFORMERLESS**
- ★ **LOW NOISE**
- ★ **30dB PAD & PHASE REVERSE SWITCH**
- ★ **HIGH PASS FILTER**
- ★ **AUX. SEND, PRE or POST (switchable)**
- ★ **600Ω LINE AMP DRIVE ON BOTH OUTPUTS**
- ★ **70dB GAIN with OPTIMUM MODULATION INDICATOR**
- ★ **Hi Z. INPUT ON FRONT PANEL JACK SOCKET**

The **SCAMP S 02 Microphone Pre-Amp** was specifically designed and developed to broaden the scope of Scamp system applications. When incorporated into the SCAMP rack the **S 02 Microphone Pre-Amp** will interface between low level signals at source and the whole range of SCAMP signal processors.

Suitably equipped with the **S 02 Microphone Pre-Amp** the SCAMP system is now accessible to MUSICIANS, RADIO & TV PRODUCTION SUITES, THEATRES and other P.A. systems etc. This significant addition means that the SCAMP range can be used from any signal source right through to the final medium, be it tape, optical film, on-air broadcast or disc.

Front panel controls are provided to:

- vary input *GAIN* from 70dB to 30dB
- control master output level
- control *AUX* output level
- switch aux *PRE or POST* main output control and in/out switch
- switch in/out a *30dB pad* for high level source signals
- switch in/out 12dB/oct *Hi Pan filter*
- *channel mute* switch and phase reversal

Additionally, on the circuit board, provision is included to select balanced (electronically) or unbalanced output and 48v phantom power (only in standard SCAMP rack configuration) send to mic. together with front panel mounted jack socket *Hi Z input* for no transformer Direct Injection.

To aid optimum utilization of the line a red l.e.d is incorporated to provide optimum modulation indication.

S 02 Mic Pre-amp Technical Specification

INPUT	600Ω
OUTPUT:	Less than 1Ω
MAX. OUTPUT LEVEL:	+24dBm.
MAX. GAIN:	70dB.
INPUT PAD	30dB
FREQUENCY RESPONSE:	20Hz – 20kHz ±0.5dB
DISTORTION:	Less than 0.05% THD
NOISE:	-125dBm Ref. 70dB gain, 300Ω source 20Hz – 20kHz bandwidth
COMMON MODE REJECTION:	Better than -90dB.
HIGH PASS FILTER:	12dB/octave -3dB 160Hz

ADR have a policy of constant improvement and consequently reserve the right to change or improve any of their specifications.

SCAMP

S01

Compressor-Limiter

- ✱ COMPRESSOR & PEAK LEVEL LIMITER
- ✱ CONSTANT OUTPUT LEVEL – ALL RATIOS (10dB Compression)
- ✱ NOISE < -80 dB DISTORTION < 0.1% THD
- ✱ SIMPLE OPERATION
- ✱ SUPERB DYNAMIC PERFORMANCE

The S01 **COMPRESSOR-LIMITER** is a further development of the well established **F700 Series**, which this **SCAMP** module now supersedes. The philosophy behind this design is a 'simple-to-operate' device that for typical amounts of compression maintains a constant output level as ratios are changed. Such a concept has proven popular in many studios where engineers working under pressure consider minimal adjustments to be optimum.

The parameters of the system have been specifically tailored to suit applications in the recording studio; in particular the **peak level limiter** has attack and release times that will give trouble free performance in extreme situations met on some instrumental tracks. In association with professional electronics the head-room will be sifficient to allow very fast transients to gently clip in the tape medium without audible effect.

The **peak level limiter** has been given an attack-time of 500μS and a fixed release of 250mS (these can be reduced greatly by changing fixed resistors for other special applications). Due to the excellence of the design, there is no over-limiting or undesirable side-effects on transient signals.

Compressor thresholds are linked to the ratio selection, so that for *10dB compression on any slope, the output level remains constant.* Above that level of compression the slope tightens to 30:1 as the *peak level limiter* becomes operational. The peak limit threshold can be switched from this position (+16dBm output unattenuated) to just under clip level at +22dBm. In the latter mode the softer slopes continue to rise until (if ever) the higher limit threshold is reached.

The output threshold is adjusted to suit the maximum output level required (continuously variable from +16dBm to −4dBm). It is only necessary to increase the input potentiometer to obtain compression or limiting.

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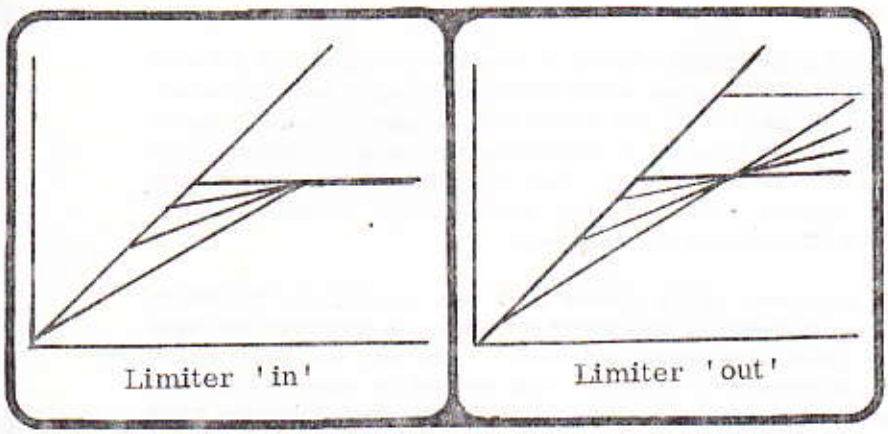
The compressor section has variable ***release*** and ***attack*** times: The release is continuously variable from 25mS – 2 secs with an ***automatic multiple*** network position that gives a fast recovery over 5dB gain reduction range on a slowly changing release platform. this forms an excellent general purpose release characteristics, increasing mean level without modulation effects. A three position attack switch gives options of 500μS (F); 2mS (M); 25mS (S).

The ratios available in the compressor section are **1:1, 1.5:1, 2:1, 3:1, 5:1** and **10:1.** The softest slope is extremely subtle, whilst the 10:1 ratio provides a *musical* limiter operating just under the peak level limiter when in the +16dBm threshold position.



The unit has a useful gain of 30dB which means that fully open the input threshold of limiting can be as low as –14dBm, or even lower for compression. Inputs and outputs are electronically balanced with an output drive capability of +24dBm into 600Ω.

Control-volt link switches enable the modules to be coupled for stereo or quadraphonic operation; standard units can be expected to match within ±2dB over the compression range without special matching.

Gain reduction is shown on a five-section LED column indicator; the red device shows the onset of peak level limiting whilst the green devices (four in number) show overall gain reduction, whether limiting or compression, in 4dB steps. There is also provision for the connection of an external gain reduction meter if required (ADR type 14 gain reduction meter).

SCAMP

SO 3

Sweep Equaliser

- ★ CONTINUOUSLY VARIABLE FREQUENCY SELECTION.
- ★ TWO 'Q' OPTIONS (over 75Hz - 7. 5kHz)
- ★ 40dB CONTROL RANGE (± 20dB)

When considering modules for the SCAMP range it was natural to include a version of our most successful equaliser, the E 900. Although not as comprehensive as the SO4 Parametric unit, this simpler parametric form is very easy to use and has selected 'Q' values that have proven most useful in general studio use.

The SO 3 is a three section device having continuously variable frequency selection, amplitude controls and 'peak-off-dip' function switches. The range of control in each section is 40dB (20dB peaking or notching) which is ideal for instrumental as well as vocal work.

Sections overlap each other in their coverage of the audio bandwidth: The wide mid-band section ranging from 75Hz - 7. 5kHz at a 'Q' of 1. 5; the HF range covers from 400Hz - 20kHz and the LF band is controlled over 20Hz-1kHz both at a 'Q' of 3.

Other front panel facilities include a three position attenuator switch, the 'In-Out" bypass switch and LED to indicate onset of clipping (+24dBm).

The advantages of a SWEEP equaliser are really self-evident; the engineer can exactly select an area (eg fundamental or overtones) that requires accentuation or attenuation without the inevitable compromise between fixed positions. Moving the frequency controls during operation will produce interesting phasing effects.

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SCAMP S 03 TECHNICAL SPECIFICATION

INPUT:	>10kΩ, balanced
INPUT ATTENUATOR:	Switched; Unity, -6dB, -12dB.
OUTPUT SOURCE IMPEDENCE:	< 1Ω
MAX. LEVEL OUTPUT:	+ 24dBm

Switch to select either unbalanced or balanced load.

SYSTEM GAIN:	Unity, except under lift or cut conditions.
CONTROL RANGE:	± 20dB lift or cut on 3 sections.
FREQ. RESPONSE:	20hz—20kHz ± 0.5dB, controls in flat position.
DISTORTION:	<0.1% total harmonic distortion at 1kHz.
SIGNAL TO NOISE RATIO:	Better than -90dB ref. normal operating level + 8dBm

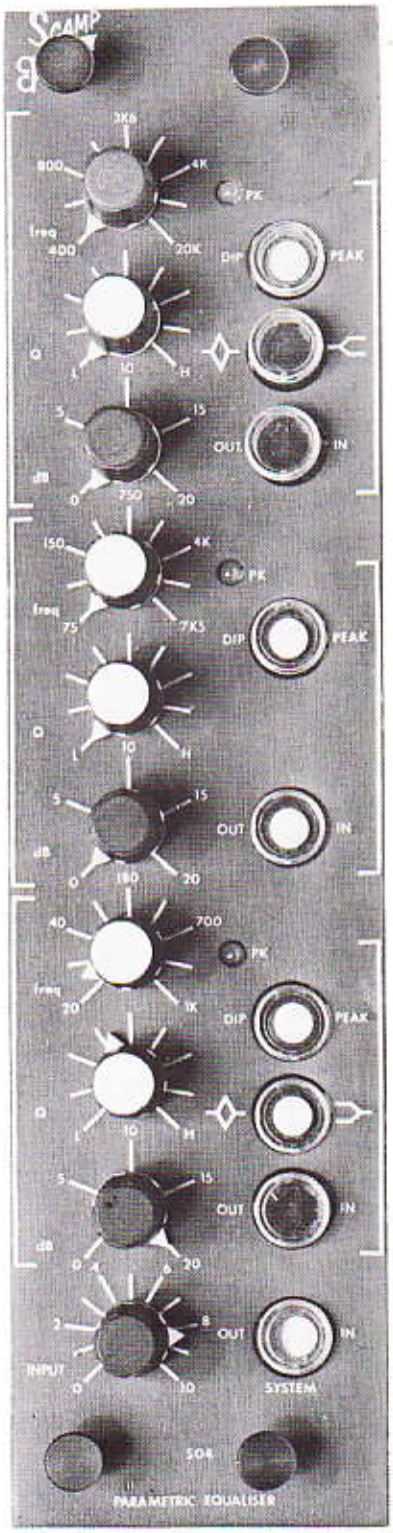
FREQUENCY CONTROL RANGE:

Section 1	20hz—1kHz, Q = 2.5
Section 2	75hz—7.5kHz, Q = 1.5
Section 3	400hz—20kHz, Q = 2.5

SCAMP

S04

Parametric Equaliser



The S04 Parametric Equaliser / Filter modules provide the ultimate in flexible equalisation within a small, yet ergonomically sensible package. There are *three independent fully parametric sections with over lapping coverage* of the audio frequency bandwidth.

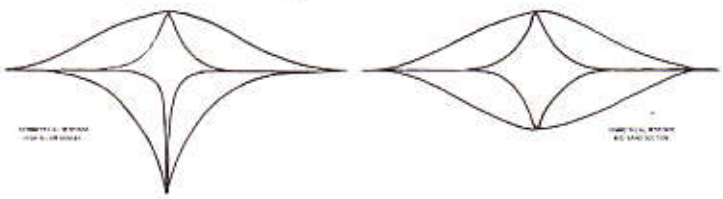
The **frequency ranges** over which the selection control of each section operates are as follows:—

Low-end: from 20Hz — 1kHz.
Mid-band: from 75Hz — 7.5kHz.
High-end: from 400Hz — 20kHz.

Each band is *continuously variable* across these frequency ranges, whilst extensive overlapping greatly enhances the effective use of the three sections.

The **Amplitude control** operates in either the *peak* or *dip* mode, dependent on the function selected with the push-button controls. The lift in the peaking or shelving mode is **0—20dB**, whilst the notch or shelf-filter obtainable is **>30dB**.

Two basic types of characteristic curve have been chosen for the system: The mid-band range has a *symmetrical* relationship between peak and dip curves, whilst both high and low sections have an *asymmetrical* relationship (see diagram). In addition, the high and low ranges can be switched between *bandpass* and *bandstop* mode, to provide high and low-pass variable characteristic shelving.filters.



The **Bandwidth** is continuously variable on each range from *one-fifth* to *five octaves* broad.

Each range has a l.e.d indicator to show optimum modulation level between each stage. There is an over all system input attenuator and in addition to the usual system *in* / *out* switch, each section has its own push-button *bypass* switch.

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SCAMP

High Pass S05
Low Pass S06

Dynamic Noise Filter

★ SELECTIVE LOW LEVEL ATTENUATION

★ DYNAMIC OR STATIC FILTERING

★ HIGH—PASS AND LOW—PASS VERSIONS

★ 0—20dB/OCT DYNAMIC SLOPE

These units enable the treatment of signal without change of level; the filter slope is programme controlled with an adjustable threshold to determine the point at which the slope commences moving from the maximum pre-set on the slope range control.

The threshold is adjusted so that the response becomes flat as soon as there is signal content to mask the noise. Units can operate imperceptibly even on classical material. There are no colouration effects due to change of slope.

Model S05 is the High—pass version and is ideal for reducing hum and rumble. Three turn-over frequencies of 100, 200 and 400Hz have been chosen.

Model S06 is a Low—pass system and is suitable for attenuating tape and general system noise (particularly electronic instruments and when reproducing LF signal) Turnover frequencies are 2, 4 and 6kHz.

Slope control side-chains are frequency selective so as to respond primarily to signals within the operating band. An input change of some 30dB is required to move the slope from 20dB/oct to a flat response.

Gating Mode: Units can also operate on the full programme content and give upto 40dB attenuation. The slope range then sets maximum attenuation from 0 to 40dB.

Dual indicator lights show changing state of attenuation and slope variation.

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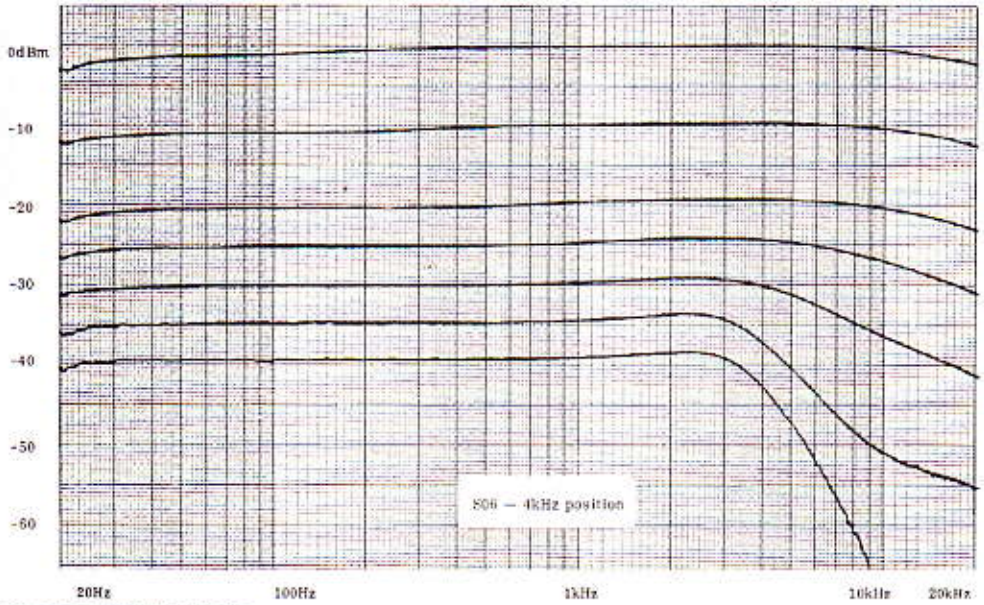
In operation, the slope range control is adjusted (with the threshold turned down) for optimum noise reduction using any of the three turn-over frequencies. The slope selected will of course also depend on the maximum permissable frequency loss at low level. The threshold control is then increased until the filter is opening on higher level signal levels (indicated by the green light). The exact point will be determined by the onset of noise masking — i. e. frequencies in the area will successfully mask the increasing noise previously attenuated at low level by the filter. A medium attack time will probably be found most successful coupled with a fast release.

The graph shows the 4kHz position on the S06 unit. Of course the threshold levels are variable and the maximum rate of slope can be pre-set to anything between 0dB and 20dB/oct. The slight rising response before turn-over is more emphasised on the 6kHz position and improves the subjective effect on the low level signal. In the 2kHz position the response remains quite flat prior to roll-off.



SPECIFICATION:

INPUT:	10k ohm balanced — unity gain
OUTPUT:	1 ohm balanced (6dB gain or unity option)
DISTORTION:	0.05% @ 1kHz THD
RESPONSE:	±1 and -3dB (worst condition) 20Hz—20kHz
NOISE:	-93dB ref +8dBm
THRESHOLD:	-26dBm and above (DNF); -35dBm (Gate)
SLOPE:	DNF: filter variable 0—20dB/oct
	Gate: 20:1 ratio
RANGE:	Gate mode — 20dB / 40dB
FORMAT:	Card module 1 x 8" for SCAMP rack system
POWER:	±30v rough DC (stabilised on board)
CODING:	Model S05 - High Pass T/O f. 100, 200, 400Hz
	Model S06 - Low Pass T/O f. 2, 4, 6kHz.

SCAMP

SO 7

Octave Equaliser

- ✱ COMPACT SYSTEM & ROOM EQUALISER
- ✱ 24dB CONTROL RANGE (± 12dB)
- ✱ STANDARD OCTAVE FREQUENCIES
- ✱ FLAT RESPONSE IN MID-POSITION (± 0.5 dB)

This unit has been devised primarily as a system equaliser which having been set up is rarely adjusted. It can of course be used on sessions, but the sweep & parametric units (SO3/ SO 4) will be found more useful for this work.

The idea of equalising the monitoring environment is excellent although correction electronically should be kept to a minimum. There is a growing body of opinion which favours the use of octave rather than third-octave systems. In attempting a definative equalisation with a third octave system there is serious danger of detrimental effects to the transient quality of the sound, whilst the octave approach gives broadly correct balance with minimum colouration.

The frequencies covered are: 31.25, 62.5, 125, 250, 500 Hz, 1, 2, 4, 8 and 16kHz. An optimum modulation indicator is incorporated.

For general equalisation of electronic systems the SO 7 Octave Equaliser offers top professional quality in a convenient package at a reasonable cost.

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MODULE TECHNICAL SPECIFICATION

Peak/Dip Amplitude:	±12dB.
Frequency Ranges:	31.5Hz, 64Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz.
Noise:	−82dB Ref to + 12dBm (all pots MAX)
Common Mode Rejection:	−70dBm or better @1kHz.
	−50dBm or better @10kHz.
Distortion:	0.025% ref to + 12dBm.
Clip Level:	+ 24dBm measured into 600Ω load.
Frequency Response:	+ 0dB, − 1dB 20Hz to 25kHz.
Power supply:	±24 volts.

Electronically balanced inputs and outputs.

SCAMP

S 08

Distribution Amplifier

* 2 IN, 8 OUT
* MONITORING FACILITY (EITHER OR BOTH INPUTS)
* OPTIMUM MODULATION INDICATOR
* COMPACT
* BALANCED/UNBALANCED OUTPUT
* 600Ω TERMINATION INPUT
* ±4dB GAIN ON INPUTS

The SCAMP S 08 Distribution Amplifier is of highest specification yet incredibly compact. Each module measures 1 in.W × 8 in.H for incorporation (max.17) into the 19 in. × 5u SCAMP rack. Thus 34 inputs and 136 outputs of DA can be incorporated into 5u of rack space.

A fine adjust 15 turn preset is provided on each input, having ±4dB gain for level correction and an optimum modulation indicator of peak sensing, slow decay characteristic operates at + 12dBm for efficient line utilization.

Trouble shooting on input channels is enabled by the insertion of mono jack headphones, stereo jack headphones on either input providing both signals simultaneously

Inputs can be simply modified for 600Ω termination 1 and switched to any output. 2 The outputs themselves, switchable balanced or unbalanced 3 feature ultra low (<1Ω) output impedance for strapping headphones or other monitoring facilities anywhere across the line without unduly affecting the signal.

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The S 08 Distribution Amplifier is highly reliable and features maximum availability by utilizing independent line amplifiers. Each input is protected against over voltage and outputs are individually isolated from each other and short circuit protected. This means that a fault in one of the lines will not bring down the others!

In short, the S 08 Distribution Amplifier brings high quality signal distibution capabilities to SCAMP users.

S 08 DISTRIBUTION AMPLIFIER SPECIFICATION

N.B. All measurements taken with outputs in a balanced mode and terminated with 600 ohms.

NOISE:	< — 100 dB ref + 8dBm
DISTORTION:	@ 1kHz «0.008% ref. + 8dBm
	@ 24kHz <0.1% ref. + 8dBm
COMMON MODE	@ 1kHz -60dB ref + 8dBm
REJECTION:	@ 10kHz -40dB ref + 8dBm
GAIN:	±4dB (front panel preset)
CLIP LEVEL:	+ 24dBm
FREQUENCY RESPONSE:	+ 0,-1dB , 20Hz to 25kHz
CROSSTALK:	Input 'B' open circuit
	Input 'A' driven @ + 8dBm
	Output 1-8 = -95dB @ 20Hz
	= -88dB@1kHz
	= -68dB@10kHz
	= -60dB @25kHz
OPTIMUM MOD INDICATOR:	OPERATES @ + 12dBm
POWER CONSUMPTION:	5w @ + 8dBm

Designed and printed in the UK by **Cranbourne Associates Ltd** (an ADR associate company)

SCAMP

S 23 Pan Effects Module

* **AUTOMATIC PANNING**
* **PATTERNED SWEEP CONTROL**
* **EXTERNAL OR MANUAL TRIGGER**
* **TRIGGER, RATE AND SPEED CONTROLS**
* **STEREO UNIT**
* **STEREO/ VIBRATO EFFECT FROM MONO**
* **CRISS-CROSS OR REVOLVING ACTION**

This superb module has been devised to create sensational panning effects. A prototype unit has been extensively used by Steve Waldman on the Kinks last Album release.
Steve says: *"The ADR S 23 Pan Effects Module is extremely simple — so simple it should have been made ages ago. The controls are well arranged and so striking are the results that it must be rated as one of the best effects module available".*
The idea of using several such units has caught the imagination of producers and engineers.

The **S 23 Pan Effects Module** is a stereo unit. The two input can be fed from a stereo source or a dual track/ group signal. The signal can be switched to provide varying output configurations.

An *ALTERNATIVE PAN* sweep mode will provide *criss-cross* outputs (or a single panned signal from one mono source), at a regular sweep rate determined by the *speed control*. In the faster modes, the signal is modulated and appears from a central position. An additional function is the ability to vary the *outward* speed whilst the *return* is at a fast fixed rate (ie the signal appears to move only one way repetitively).

In the *TRIGGERED SWEEP* mode the pan effect can either be manually triggered to sweep left-right-left and stop, or left-right or vice versa. Triggering can also be programme controlled to operate from an internal or external signal at line level. The trigger *RATE* control determines the repeat rate within a given period whilst the *SPEED* function controls the speed of image shift. Again this can be arranged in a repetitive *go-return-go* or *go-go-go* mode.

Track reversal and normal modes are indicated by two L.E.D's which also show speed of panning action. A further L.E.D. lights to show trigger rate function.

As with all **SCAMP** modules the unit meets an exceptionally high specification.

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S 23 PAN EFFECTS MODULE TECHNICAL SPECIFICATION

Clip level (input / output):	+ 24dBm Electronically balanced.
Noise level:	Better than -96dB ref + 8dBm
Distortion:	Better than 0.05% THD@ 1kHz@ + 8dBm
Frequency Response:	20Hz — 20kHz ±0.5dB

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Audio+Design

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Pang Bourne, Reading
Berks. England
Tel: Reading (0734) 861000
Telex: 848722 AOR UK

PRICE LIST

February 1984

19" RACK MOUNT UNITS

F601-R	Super-Dynamic Limiter-Mono Rack Mount.....$	990.00
F601-RS	Super-Dynamic Limiter-Stereo/Dual Mono Rack Mount.....	1490.00
D60-RS	Stereo Feed Forward Limiter Delay Line for F601.....	560.00
F690-RS	Music/Voice Ratio Limiter-Stereo/Dual Mono Rack Mount.	1325.00
F760X-N	Compex-Limiter Mono 'N' Module*.....	990.00
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F760X-RS	Compex-Limiter Stereo/Dual Mono Rack Mount.....	1980.00
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E900-N	Sweep Equalizer Mono 'N' Module*.....	389.00
E950-RS	Paragraphic Equalizer Stereo/Mono Rack Mount.....	1680.00
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EXPRESS LIMITER	Stereo Compressor-Limiter-Expander.....	1450.00
PANSCAN	Stereo Automatic Panner with Beat Counter.....	890.00
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PROPAK II	Semi-Pro to Pro and EIAJ Interface.....	290.00
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	SMPTE/EBU Time Code Reader: without illumination.....	495.00
DIRECT BOX	Transformerless.....	120.00
D-ZAP	Shock Probe and Continuity Test.....	55.00

OPTIONAL EXTRAS

BT's	For Ampak B ea.....	22.00
/T Option	Balancing Transformers for F + E series (per channel).	120.00
/ST Option	Stereo Matching of Mono Units (per channel).....	105.00
*'N' KIT	19" Rack Mount Kit for up to 5 'N' Modules.....	60.00
12KHz/15KHz	Bandwidth Restricting Filters for F601 ea.....	125.00
12dB/Octave	Band-split Filters for Transdynamic.....	135.00

These are recommended selling prices (excluding freight). Settlement discounts are usually available but vary from country to country. Please contact your local distributor for details.

SIDE 1

MAJOR RACK (19")	
MAJOR RACK PSU	
MAJOR RACK + PSU	
MINI RACK	
MINI FLIGHT CASE	
S26 MINI PSU	
MINI PACKAGE	

SCAMP MODULES

S100	
F300	
S01	
S02	
S03	
S04	
S05	
S06	
S07	
S08	
S12	
S12 KIT	
S23	
S24	
S25	
S27	
S30	
S31	

SCAMP ACCESSORIES

SCAMP MODULAR SYSTEM

	To hold 17 one inch modules.....$	190.00
	Power Supply 19" Rack Mounting.....	405.00
	Package.....	495.00
	To hold 6 one inch modules.....	150.00
	.....	125.00
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	Including Rack, S26 PSU,+ Black Flight Case.....	495.00

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	Expander/Gate.....	465.00
	Compressor/Limiter.....	465.00
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	Sweep Equalizer.....	450.00
	Parametric Equalizer.....	595.00
	Dynamic Noise Filter/Gate (Hi-Pass).....	450.00
	Dynamic Noise Filter/Gate (Lo-Pass).....	450.00
	Octave Equalizer.....	415.00
	Distribution Amplifier (2 In, 8 Out).....	545.00
	T.T. Jack Module (12 Way).....	128.00
	Includes 12 T.T. Jacks + Interface.....	95.00
	Pan Effects Stereo Automatic Panner.....	560.00
	Time Shape Module - ADT Flanger etc.....	1055.00
	Dual De-Esser.....	605.00
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	Compressor/Limiter with Log/Lin Release etc.....	485.00

BLANK MODULE KITS* (Prices are net)
1" $21.50; 2" $27.00; 4" $32.00; 8" $43.00
*KITS refundable at any time subject to satifactory condition.

TWIN RACK MOUNT To hold 2x1" SCAMP Modules
Horizontal in 19" Rack..... 80.00
SCAMP EXTENDER CARD..... 70.00

OVER: MULTI - BAND PROCESSING PACKAGES.....

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SKAGGS Telecommunications
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Deluxe Video	Hollywood, CA
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Editel	New York & Chicago
Eureka Teleproductions	San Carlos, CA
Omega Audio & Productions	Dallas, TX
One Pass Video	San Francisco, CA
Osmond Teleproduction	Orem, UT
Paramount Pictures	Los Angeles, CA
Technicolor	Hollywood, CA
Telemation	Seattle, WA
Teletronix	New York, NY
20th Century Fox	Los Angeles, CA

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KALE	Richland, WA	KMPS	Seattle, WA	KWAX	Eugene, OR	WINS	New York, NY
KARM	Fresno, CA	KNHC	Seattle	KYUU	San Francisco, CA	WINQ	Winchendon, MA
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KBYU	Ogden, UT	KOSI	Denver, CO	WAXY	Fort Lauderdale, FL	WITT	Tuscola, IL
KCEY	Turlock, CA	KOSY	Texarkana, TX	WCCO-FM/TV	Minneapolis, MN	WKSW	Cleveland, OH
KCYX	McMinnville, OR	KPGE	Page, AZ	WCGQ	Columbus, GA	WKSY	Columbia City, IN
KDKA	Pittsburgh, PA	KPLZ	Seattle	WCKS	Cape Canveral, FL	WKXZ	Buffalo, NY
KOWB	Minneapolis, MN	KPSI	Palm Springs, CA	WDCA-TV	Washington, DC	WLCY	St. Petersburg, FL
KEZL	San Diego, CA	KPUA	Hilo, HI	WDEL	Wilmington, DE	WLKW	Providence, RI
KFBK	Sacramento, CA	KROY	Sacramento, CA	WDUQ	Pittsburgh, PA	WLOO	Chicago, IL
KGGM-TV	Albuquerque, NM	KSEA	Seattle, WA	WDUZ	Green Bay, WI	WLUP	Chicago, IL
KGHO	Hoquiam, WA	KSFI	Salt Lake City, UT	WDVR	Philadelphia, PA	WMFJ	Daytona Beach, FL
KGW	Portland, OR	KSMU	Springfield, MO	WEAZ	Philadelphia, PA	WNFY	Palatka, FL
KHOW	Denver, CO	KSTP	Minneapolis, MN	WEEL	Arlington, VA	WNIC	Dearborn, MI
KING	Seattle, WA	KTAC	Seattle, WA	WESC	Greenville, SC	WRBT-TV	Baton Rouge, LA
KINK	Portland, OR	KTMA	St. Paul, MN	WFOG	Suffolk, VA	WRKS	New York, NY
KIRO	Seattle, WA	KTRH	Houston, TX	WGBS	Miami, FL	WRVR	Memphis, TN
KISW	Seattle, WA	KTRU	Houston, TX	WGN	Chicago, IL	WSPC	St. Paul, VA
KJR	Seattle, WA	KTXQ	Fort Worth, TX	WHSP	Fairhope, AL	WUJC	University Heights, OH
KRCK	Portland	KVI	Seattle, WA	WHUE	Boston, MA	WZAT	Savannah, GA

SIDE 1 -- Continued.....

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INTERNATIONAL

SOME BROADCAST USERS OF AUDIO + DESIGN PROCESSORS

GREAT BRITAIN

Advision
Associated Television (ATV)
British Broadcasting Corporation (BBC)
Beacon Radio
B R M B
Capital Radio
C B C - London
C B S - London
Downtown Radio
Gloucester Broadcasting
Grampian Television
Granada Television
Independant Broadcast Authority (IBA)
Independant Television News (ITN)
London Broadcasting Company (LBC)
London Weekend Television (LWT)
Manx Radio
Metro Radio
Picadilly Radio
Plymouth Sound Radio
Radio City, Radio Clyde, Radio Forth, Radio Hallam,
Radio Mersey (BBC), Radio Orwell, Radio Scotland (BBC)
Radio Tees, Radio Trent, Radio Victory, Radio 210
Rediffusion
Southern Television
Scottish Television
Thames Television
Tyne Tees Television
Ulster Television
Yorkshire Television
Swansea Sound Radio

AROUND THE WORLD

Bahrain Broadcasting Co.	Bahrain
B F B S	Cypress, Germany, Gibraltar
C B C	Canada
B C T V	Canada
B R - F S	Germany
C H Q M	Canada
C K N W	Canada
E B C	Jamaica
Falkland Islands Bdcstg	Falkland Islands
Gibraltar Broadcasting	Gibraltar
Magyar Radio	Hungary
N D R	Germany
Nippon Broadcasting	Japan
N B Z	New Zealand
Radio Botswana	Botswana
Radio Bremen	Germany
Radio Gambia	Gambia
Radio Jaguaro Treviso	Italy
Radio Luxemburg	Luxembourg
Radio Malta	Malta
Radio Milano	Italy
Radio Reporter	Italy
Radio Pavia	Italy
Radio Vigevano	Italy
Radio Telfis Eireann	Ireland
R T V	Yugoslavia
S W F	Germany
Swiss Broadcasting Co.	Switzerland
S F B	Germany
Sveriges Lokalradio	Sweden
Radio Transamerica	Brazil
Radio Triunfo	Portugal
Radio Vatican	Italy
Radio Hauraki	New Zealand

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