
OPTRO

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AUDIO VISUAL SYSTEMS

Several systems are produced by Optronics Pty. Ltd. Each is of a modular form. The encoding being either tone or pulse. The decoding being pulse, pilot tone or linear.

Up to twelve channel systems use cue tones, larger systems using digital sequencial control.

The decoding of pulse information enables starting or stopping of any electrical function e.g.

16 mm. projector, slide change
35 mm. projector, lights ON/OFF etc.

The decoding of pilot tone enables 16 mm. projectors to run up in sync and lock to reference tone off tape. This enables lip sync sound off tape.

The decoding of linear information enables control of project lamp intensity etc. So allowing cross fades, dissolves, etc.

Standard digital system will provide up to 200 discrete functions e.g.

pulse, sync run (pilot tone with sync run up)
and linear control in any combinations.

Equipment Supplied for:

(a) General Motors Holden presentation operating –

6 Kodak SAV 35mm slide projectors
4 Bell & Howell 16 mm projectors in lip sync
1 lighting effects unit
1 2¼" square Rolli projector
plus three channel sound
all from 4 track ½" replay tape machine (12 channel system)

(b) Expo 1970 to A.B.C. Australia to operate display at Expo (8 channel).

(c) G.M.H. display, Hurricane Experimental car (6 channel).

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1000 SERIES AUDIO MULTI CHANNEL RECORDERS

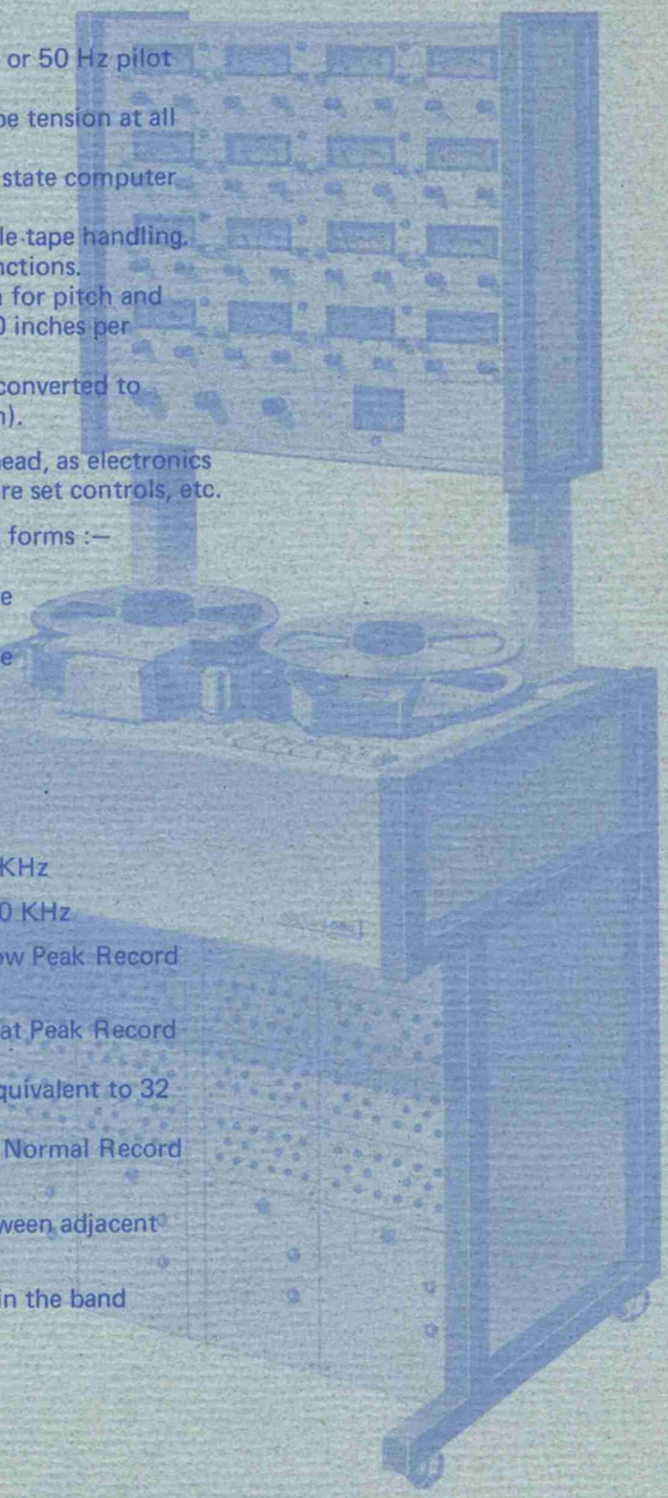
(a) Servo capstan drive, crystal controlled or 50 Hz pilot tone sync locked.
(b) Servo reel motors provide constant tape tension at all times.
(c) Tape transport mode control via solid state computer
m logic.
(d) Electrical differential braking for gentle tape handling.
(e) Full remote control of all machine functions.
(f) Continuously variable speed operation for pitch and time changing over the range 7.5 to 30 inches per second.
(g) Standard 2 inch tape transport easily converted to handle 3 inch tape (24 track operation).

Unit also available without meter/control head, as electronics below transport incorporate all necessary pre set controls, etc.

The recorders are available in the following forms :—

2 track	0.25 inch tape
2 track/4 track	0.25/0.5 inch tape
4 track	0.5 inch tape
4 track/8 track	0.5/1.00 inch tape
8 track	1.00 inch tape
8 track/16 track	1.0/2.0 inch tape
16 track	2.0 inch tape
24 track	3.0 inch tape

Specifications :	15 i.p.s.
Replay Response :	± 1 dB 30 Hz to 15 KHz
Overall Response :	± 1.5 dB 30 Hz to 20 KHz
Noise :	better than 68 dB below Peak Record Level
Distortion :	less than 2.5% T.H.D. at Peak Record Level. (Peak record level is equivalent to 32 mM/mm track width) less that 1% T.H.D. at Normal Record Level.
Cross talk :	better than 60 dB between adjacent tracks.
Wow & Flutter :	less than 0.50%r.m.s. in the band 0.5 Hz to 250 Hz



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FULL TRACK RECORDERS

Specifications :

7.5 and 15 i.p.s. operation.
0.250" full track erase, record and replay long life heads (10,000 hours).
Three motor transport.
Differential electrical braking.
Auto reel tensioning (constant tape tension).
Illuminated push button operation, plus full remote control all deck functions.
Solid state silicon semi conductors employed exclusively.

Replay Frequency Response I.E.C.

7.5 i.p.s.	± 1.5 dB	30 Hz to 15 KHz
15 i.p.s.	± 1.5 dB	30 Hz to 20 KHz

Overall Frequency Response I.E.C.

7.5 i.p.s.	± 1.5 dB	30 Hz to 15 KHz
15 i.p.s.	± 1.5 dB	30 Hz to 20 KHz

Distortion :

7.5 i.p.s.	0.5% at normal record level
	2% at peak record level
15 i.p.s.	0.5% at normal record level
	2% at peak record level

Noise Overall :

7.5 i.p.s.	62 dB below 32 mM reference level
15 i.p.s.	64 dB below 32 mM reference level

Flutter and Wow: less than 0.08 at 7.5 i.p.s.
0.06 at 15 i.p.s.

Spooling Time less than 2 minutes 1,200 feet.
10 Watt internal monitor
Full metering facilities.
Separate microphone and line inputs.
Separate speaker and line outputs.
Starting time less than 0.1 seconds.
Stopping time less than 0.5 seconds.
Mains operation 200 to 260 Volt at 50 Hz at 150 V.A.

Weight:	60 lbs
Size:	Deck 8.3/4" high x 19" wide x 7.1/2" deep
	Amplifier 5.1/4" high x 19" wide x 7.1/2" deep
	Suitable for rack mounting.

OPTRO

GRAPHIC EQUALIZER 202

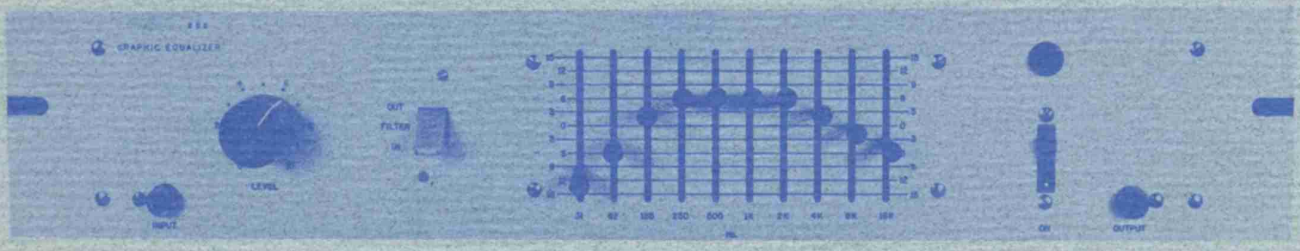
10 octaves covering the audio spectrum.

Boost and cut of 15 dB at each frequency.

Low noise and low distortion, bridging or terminated input, 600 ohm output, silicon solid state electronics, and providing high quality and reliability.

Specifications:

Input	600 ohm 10K ohm level	(terminated) (bridging) +24 dBm maximum
Output	600 ohm level	 +24 dBm maximum
Equalizer	Frequencies	31 Hz, 62 Hz, 125 Hz, 250 Hz, 500 Hz, 1 KHz, 2 KHz, 4 KHz, 8 KHz, and 16 KHz.
	Amount	± 15 dB at each of the above frequencies.
	In/Out	Key, silent operation
Frequency Response	(Equaliser out)	± 0.5 dB 30 Hz to 15 KHz
Distortion	less than 0.5% T.H.D. 30 Hz to 15 KHz at +24 dBm output	
Noise	80 dB below +16 dBm output	
Size	3.5" high x 19" wide x 8" deep (standard rack mounting)	
Power	200 to 260 Volts 40 to 60 Hz at 20 V.A.	
Connectors	Front Panel Rear Panel	Tip, ring and sleeve jacks normalised to rear connectors XL-3-13 Input XL-3-14 Output
Rear Panel	Input connector, 600 ohm or bridging input slide switch, output connector and mains fuse.	



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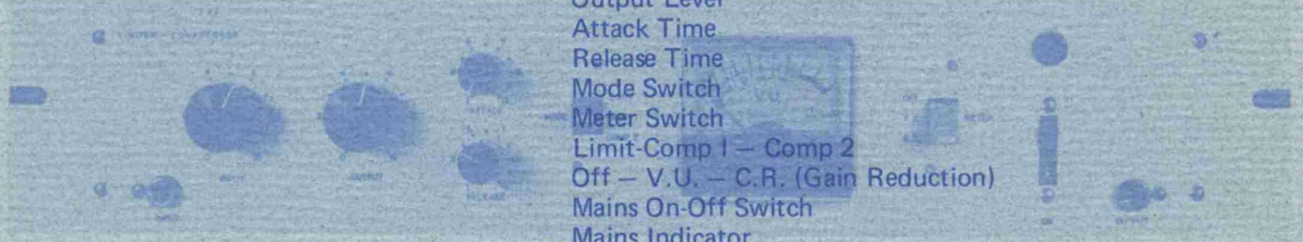
LIMITER-COMPRESSOR 302

The OPTRO 302 Limiter-Compressor features :— Fully solid state, (silicon semi conductors), rack mounting, mains powered, wide dynamic range, low distortion, silent operation.

Specifications :

Limit-Compress	Dynamic control range 35 dB	
Limit Mode	10 dB input into 1 dB output	
Compress Mode I	5 dB input into 1 dB output	
Compress Mode 2	2.5 dB input into 1 dB output	
Attack Time	50 micro sec. to 1 milli-sec. adjustable	
Release Time	0.1 to 1.1 seconds adjustable	
Frequency Response	± 0.25 dB 30 Hz to 15 KHz	
Noise	75 dB below +16 dBm input/output level	
Distortion	less than 0.25% T.H.D. at any level up to full limit/compress in the band 100 Hz to 15 KHz, less than 0.5% T.H.D. at any level up to full limit/compress in the band 30 Hz to 100 Hz (due to control modulation)	
	Release time set to maximum during above tests.	
Input	Bridging or 600 ohm (by termination switch)	
	Level minimum	-8 dBm
	maximum	+24 dBm
Output	600 ohm	
	Normal output level	+8 dBm
	Maximum output level	+24 dBm
Stereo	Rear connector provided to enable interlocked operation for stereo.	
Connectors	Input	Rear XL-3-13 Cannon
		Front Tip, ring, sleeve jack
	Output	Rear XL-3-14 Cannon
		Front Tip, ring sleeve jack
	Stereo	Rear 5 pin DIN
Controls	Front Panel	Input Level
		Output Level
		Attack Time
		Release Time
		Mode Switch
		Meter Switch
		Limit-Comp I — Comp 2
		Off — V.U. — C.R. (Gain Reduction)
		Mains On-Off Switch
		Mains Indicator
	Rear Panel	Bridging or 600 ohm input slide switch
		Fuse 2 Amp
Size	3.5" high 19" wide 8" deep	
Weight	15 lbs.	
Power	200 — 260 Volts 40 to 60 Hz at 20 VA.	



ALSO Model OPTRO 303 De-essed version available.

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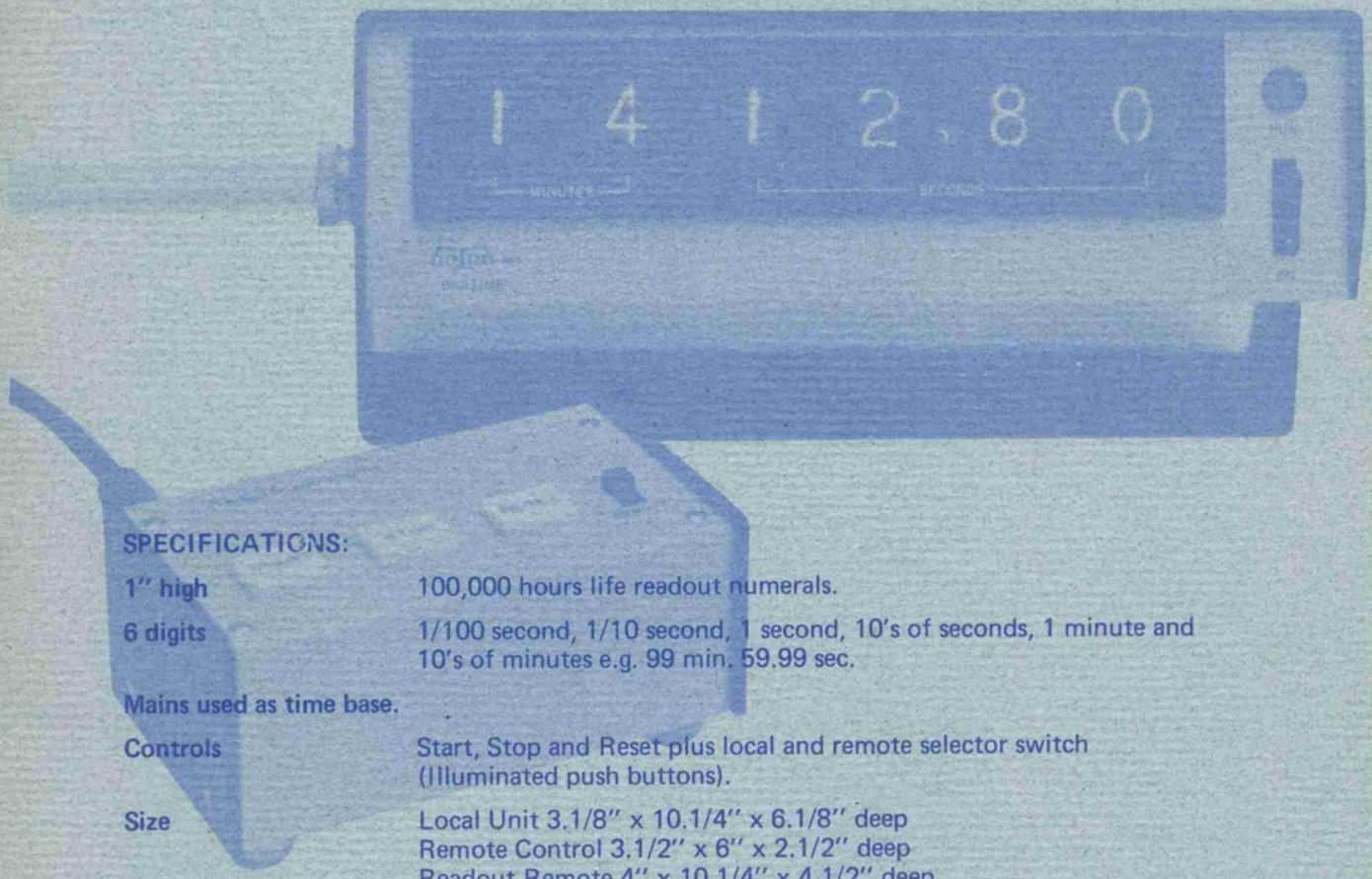
DIGITIME (electronic stopwatch)



SPECIFICATIONS:

1" high	100,000 hours life readout numerals.
6 digits	1/100 second, 1/10 second, 1 second, 10's of seconds, 1 minute and 10's of minutes e.g. 99 min. 59.99 sec.
Mains used as time base.	
Controls	Start, Stop and Reset plus local and remote selector switch (Illuminated push buttons).
Size	Local Unit 3.1/8" x 10.1/4" x 6.1/8" deep Remote Control 3.1/2" x 6" x 2.1/2" deep Readout Remote 4" x 10.1/4" x 4.1/2" deep
Remote Control Cable	$ 0.32 per foot, maximum length 300 feet.
Remote Readout Cable	$ 0.98 per foot, maximum length 300 feet.

METRONOME

Electronic metronome that emits a tick and a short tone burst from two standard +8 dBm 600 ohms balanced output.

The period of time being set by three digital thumb wheels in one hundredth of a second increments. The minimum time being 0.01 of a second, maximum time being 9.99 seconds. An inflection can be placed upon any second through to tenth output pulse. The inflection being in the form of a more pronounced tick from its output and a slightly different tone from the tone burst output.

OPTRO

100 WATT MONITOR AMPLIFIER

A fully solid state, low distortion, 100 Watt r.m.s. 15 or 16 ohm load, self contained, mains powered monitor amplifier. The amplifier can be supplied in a metal edged wooden carry case or a dual rack mounting frame. The rack frame being 19" x 7" high x 12" deep.

Output short circuit protection is incorporated. All connections to the unit are via Cannon XL connectors.

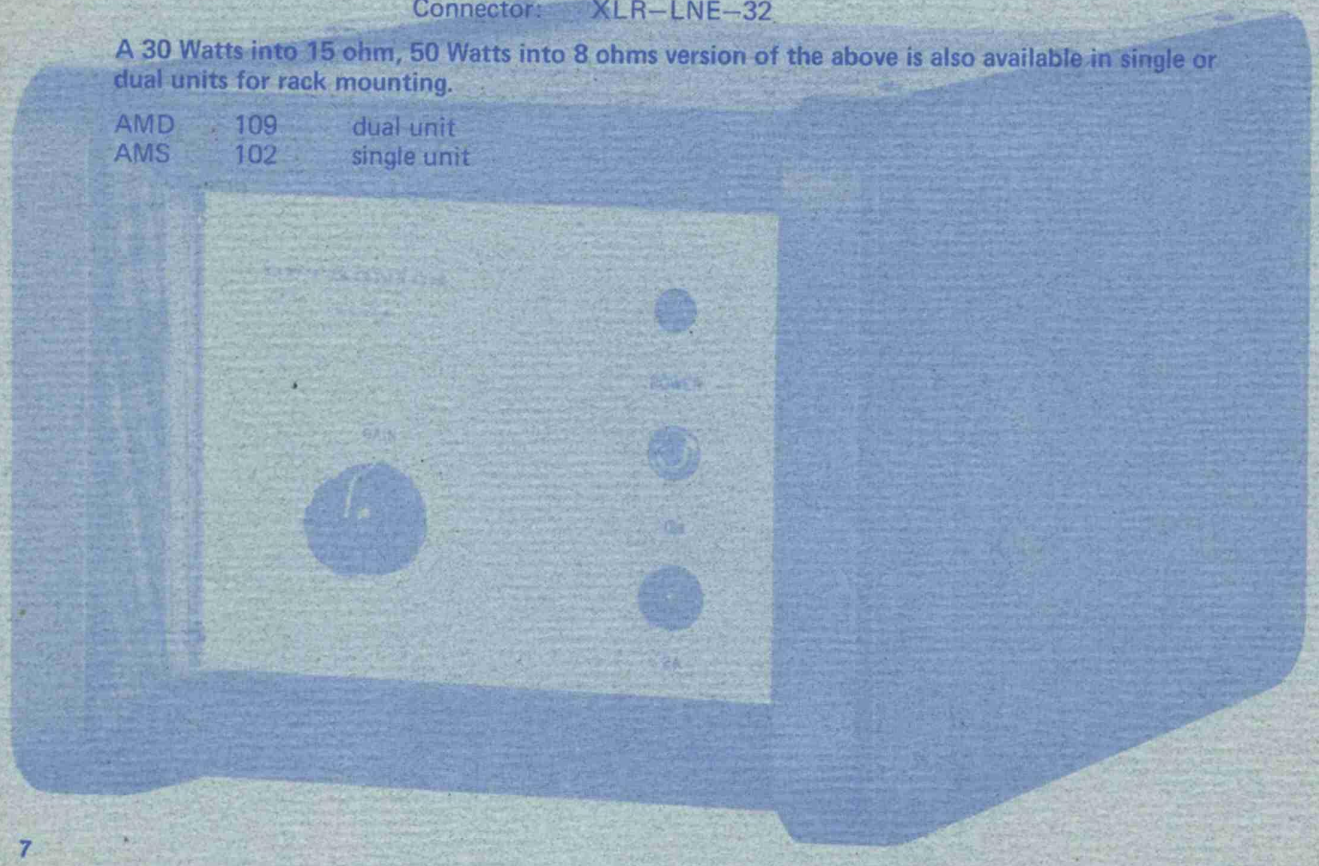
A pre set gain control is fitted.

Specifications :

Frequency Response:	± 0.5 dB	30 Hz to 15KHz
Distortion:	less than 0.1% T.H.D. 30 Hz to 15 KHz at all power levels up to 100 Watts.	
	Note: Distortion reduces as output level is decreased.	
Noise:	greater than 90 dB below maximum output level.	
Input:	Impedance:	10K ohm balanced
	Level:	–10 dBm to +30 dBm
	Connector:	XL–3–13
Output:	Impedance:	less than 0.1 ohm 30 Hz to 15 KHz
	Level:	100 Watts r.m.s.
	Connector:	XL–3–14
Power:	240V A.C.	50 Hz to 60 Hz 120 VA
	120V A.C.	to order
	Connector:	XLR–LNE–32

A 30 Watts into 15 ohm, 50 Watts into 8 ohms version of the above is also available in single or dual units for rack mounting.

AMD	109	dual unit
AMS	102	single unit



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MIXING CONSOLE 710

The photograph is of a comprehensive small recording studio desk built for Bill Armstrong Pty. Ltd., Melbourne. The unit incorporates :

5 Input Channels (Type III) incorporating :

- mic. line OFF switch
- maximum input sensitivity switch
- base, treble and presence controls with seven selectable peak and dip presence frequencies
- foldback facilities
- echo feeds
- channel output selector
- panning control
- input phase change switch

2 Output Modules incorporating :

- programme out
- echo out
- echo one and two returns

1 Switching and Monitoring module :

relay matrix switching enabling the insertion of a limiter/compressor, graphic equaliser or audio gate in series with any of the five input modules or two output modules.

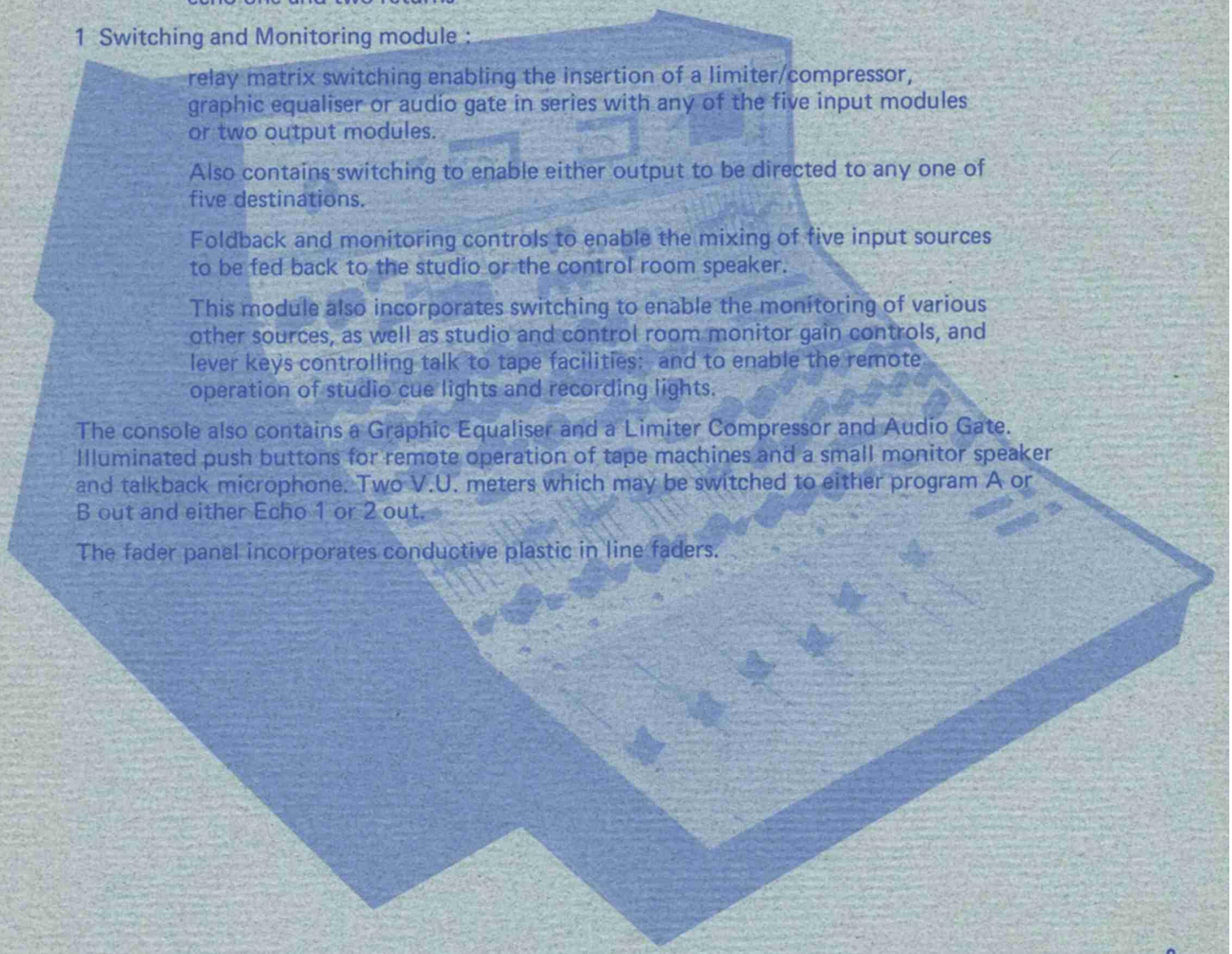
Also contains switching to enable either output to be directed to any one of five destinations.

Foldback and monitoring controls to enable the mixing of five input sources to be fed back to the studio or the control room speaker.

This module also incorporates switching to enable the monitoring of various other sources, as well as studio and control room monitor gain controls, and lever keys controlling talk to tape facilities: and to enable the remote operation of studio cue lights and recording lights.

The console also contains a Graphic Equaliser and a Limiter Compressor and Audio Gate. Illuminated push buttons for remote operation of tape machines and a small monitor speaker and talkback microphone. Two V.U. meters which may be switched to either program A or B out and either Echo 1 or 2 out.

The fader panel incorporates conductive plastic in line faders.



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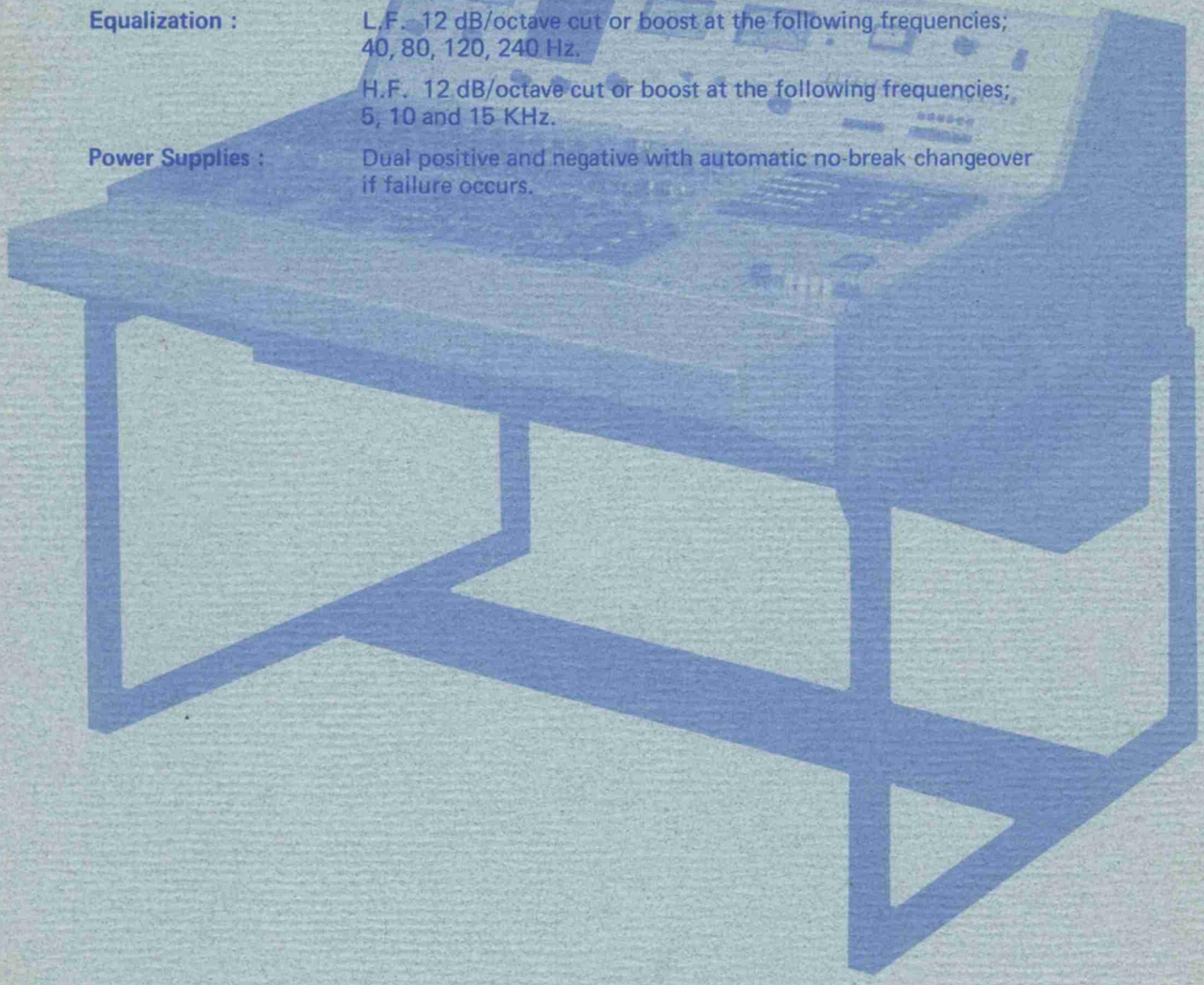
22 CHANNEL AUDIO MIXING DESK

SPECIFICATIONS :

Frequency Response :	± 0.5 dB	30 Hz to 15 KHz
Distortion :	less than 0.5% T.H.D. at +16 dBm	30 Hz to 15 KHz.
Noise :	Microphone input better than −125 dBm equivalent referred input noise,	30 Hz to 15 KHz.
	Line Input:	+16 dBm input and +16 dBm output noise greater than 80 dB below output.
Gain :	Microphone:	−80 dBm to −20 dBm
	Line:	−20 dBm to +30 dBm
Output :	Maximum level:	+24 dBm
	Impedance:	less than 80 ohms 30 Hz to 15 KHz.
Equalization :	L.F. 12 dB/octave cut or boost at the following frequencies; 40, 80, 120, 240 Hz.	
	H.F. 12 dB/octave cut or boost at the following frequencies; 5, 10 and 15 KHz.	
Power Supplies :	Dual positive and negative with automatic no-break changeover if failure occurs.	



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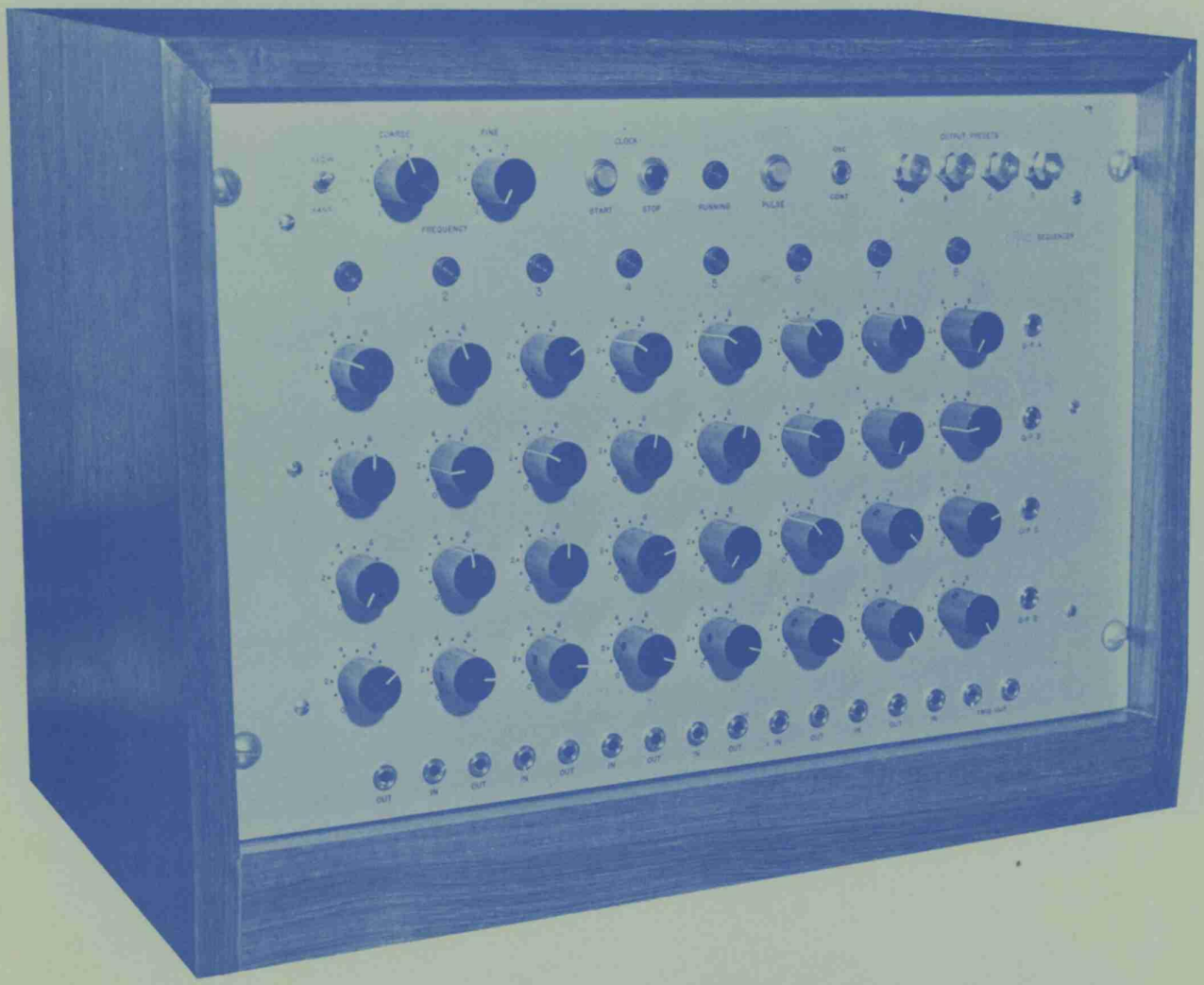
7000 SYTHESIZER

A voltage controlled music synthesizer designed and built in Australia.

Full advantage has been taken of integrated circuits in construction of this unit. This enables more complex voltage control functions e.g. voltage controlled envelope generator, voltage controlled balanced modulators, and frequency shifters.

A five octave keyboard is used as one voltage input to the synthesizer.

A digital sequencer of 8 rows of 4 columns enables voltage control in a pre-determined sequence. The sequencer can also be externally controlled by punched paper tape or computer. Also direct computor control can be employed by interfacing via digital to analogue converters. The total system employs several voltage controlled oscillators, amplifiers, low pass and high pass filters, mixers, reverberation etc.



DIGITAL SEQUENCER 620

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