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with **MUSIC & TECHNOLOGY**

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Great Mistakes:
double feature

Madonna crew
gagged

Studio Lighting

Macken: every-
thing ADAT

J2: Video, Lights
& Sound: huge
review inside!

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pages!

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FOLIO *si*

Spirit
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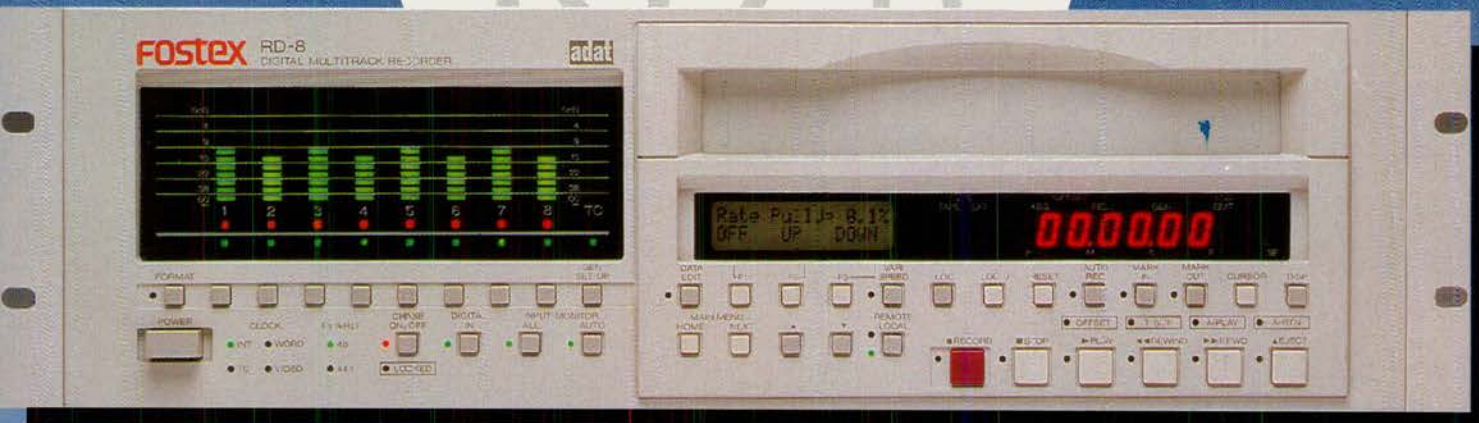
RD-8

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RD-8



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adat

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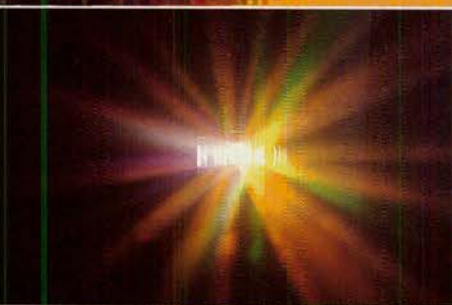
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cassettes. What's more, this remarkably flexible unit could be expanded to suit everyone's requirements and budget by adding more DA-88 units for up to 128 tracks of perfectly synchronised digital sound. If you needed to use the DA-88 with other recorders, digital or video, you just plugged the optional SY-88 chase synchroniser board into the spare slot on the DA-88 rear panel – simple.

Even then, TASCAM was no newcomer to digital sound reproduction. With over 35 years at the forefront of analogue and digital recording technology, TASCAM had already become the world's largest manufacturer of recording equipment, and had an unequalled reputation for innovation, quality and reliability. The same uncompromising standards were

maintained in the DA-88. That's why in the current age (post DA-88), we remember the DA-88 as the turning point in recording history."

This is the machine that the recording industry has been waiting for. The TASCAM DA-88 8-track Digital Audio Recorder is the pinnacle of sound reproduction technology.

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TASCAM

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inside

DECEMBER 1993 - JANUARY 1994

Editors Notes

SONICS appears to have ceased publication as we know it, following an attempt at selling the title in November, along with the Sonics Yearbook. We certainly did bid for the 14 year old title, but owners Federal Publishing seem to have decided to hang on to the name. Nevertheless they've told some advertisers 'Sonics is indefinitely suspended'.

Doubtless Federal have future plans for publishing into our industry, and when they tell us what they are, we will duly tell you too!

LDI ORLANDO was the usual immaculate hotbed of new technology, a classy, well presented tradeshow that is favoured by industry types from this part of the world. Caroline Grafton got back just in time to report on LDI in these pages.

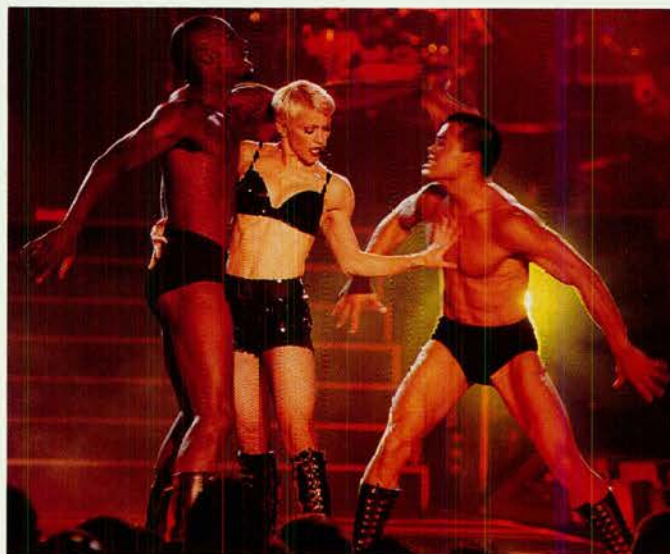
GREG SIMMONS joins Connections from this issue as Studio Editor. Simmo's last function was Yearbook Editor for Sonics, where he has carved a good reputation and become something of an equipment guru.

He brings a deep understanding of the art of recording into these pages, and we are certain that you, dear reader, will benefit.

Connections covers a lot of turf across Lighting, Live, Contracting, Staging, Studio, Audio & Video. We have noticed a increasing blur between what we once regarded as 'studio' and music technology.

This is typified by the roaring growth of the project studio market, which is more often than not housed in a room inside a house. The project studio market is a boomer for smart music retailers, who need every trick in the book to maintain sales growth.

ENTECH - our tradeshow - is still a long way off, but we're knocked out by the response. Actually producing this issue - our largest yet - has been difficult because of local and international enquiries, along with exhibition space sales. At press time we have sold 60% of available floorspace! A great debut. Ta! (Details P. 24)



Madonna pix by Bob King

SOUND:

U2: Joe O'Herlihy tells about how the band perform IN FRONT of the PA, the four foldback consoles, and the new ATI Paragon house console. Warning: Lots and Lots of equipment talk!

STARTS PAGE 82

LIGHTING:

Madonna brought it all with her, and instructed the crew Not To Talk. Naturally Catriona Forcer got the story anyway.

PAGE 72

U2's lighting crew DO talk to us!

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STUDIO:

RECORDERS: The complete guide. Greg Simmons tells where technology is at today.....

STARTS PAGE 47

ADAT: Dave Macken has had an ADAT on the road for four months now. He details the details and reveals all there is!

STARTS PAGE 68

BUYERS GUIDE

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FOLLOW SPOTS: Page 56

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Buyers Guide for February:
Wireless Microphones, Studio Monitors, Scrollers, Colour Changers, PC Spots.

Next issue: February '94.

Deadline: January 15th.

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Great Mistakes DOUBLE! P. 105

HEY - if it isn't on the exact page number above, look nearby. We make this contents page early on, so things move about a bit!

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SHOWBIZ

NEWS & UPDATE



PIC by Catriona

U2 set new live standards

In many ways the ZCOMERANG tour redefined audience expectations in a live show. Sound spec. was impressive, with the band performing IN FRONT of a giant Jands/Clair Bros. S4 system that included 144 speaker cabinets, with an additional 24 new P4 'Piston' cabinets never seen before in Australia.

Also new downunder was the ATI Paragon mixing console that sound engineer Joe O'Herlihy flew in - along with 2 Boeing 747's loaded with gear. Foldback (or 'Monitors' depending on which part of earth you live on) was mixed on four 40 channel consoles - delivering up to 32 sends.

Video was the medium that brought this show into its own, with three huge Dig walls and four Philips Vid walls complemented by 36 Barco 28" monitors around the stage. This massive hive of technology was controlled from 'The Underworld', beneath the stage, and took signals from 14 laser disk players, live cameras and a satellite dish "to grab whatever's out there!"

Connections caught up the tour in Sydney, where two dates were staged in the Sydney Football Stadium, and beamed back to the USA for a live TV special. In contrast to dodgy weather the week before that saw Madonna's 2nd S.C.G. show postponed, U2 experienced perfect conditions topped off by a full moon and no wind.

Visual imagery from the concert was joined with footage of Sydney from the air, the harbour and the perfect view of the city framed beneath the sweeping circular grandstand roof of the stadium.

While Sydney Football Stadium provided stunning visuals, the same aesthetically pleasing grandstand roof contributed to totally and utterly appalling acoustics that rendered the concert unintelligible to a great many paying punters, including several Connections writers. Clearly this particular venue is unsuitable for amplified music, as very few - if any - concerts are staged there.

OUR FULL U2 COVERAGE STARTS ON PAGE 82.

Product Bits

◆ **Stereo Guitar Amp:** Digitech have released the G-150, a rack mount mosfet amp selling at \$1,399. The T3 pre-amp (\$1249) feeds this. Dad/Digitech recently took over Hafler MI products. Details from C.M.I. on (03) 315-2244.

◆ **CCT Lighting is back,** with Rosco Australia the new agents. For more details, see story inside.

◆ **AE Australia and DMC** have both announced new products for the disco/nightclub industry. See Nightclubs section, from page 94.

◆ **RADAR** is the hot new 24 track digital recorder in the USA. Who will handle it here?



The ADAT Group™

Technology is changing the music industry day by day. But, change without focus and compatibility delivers only chaos. Where should you turn?

The ADAT Group. Composed of a diverse group of manufacturers who have delivered extraordinarily focused products to the music industry, their products are successful because they shape technology into an extension of your creative personality.

Now, as members of the ADAT Developers Program, they all agree on one thing: the technology of ADAT.

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In this day of leapfrog technology, the last place you want to be is on the bottom. Over 15,000 ADAT customers worldwide have chosen to stay on top. More than all other digital multitrack owners combined. To keep them there, The ADAT Group keeps pulling out all the stops. Making it safe for you to leap.

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Vega Debut MediaLink Wireless

A surprise at the LDI '94 tradeshow in Orlando recently was the debut, and subsequent first prize winning, Vega 'VegaNet' wireless system. This is the flavour of things to come, for here we have a Media Link based product in the flesh.

Ian Johnstone at Mark IV Australia is highly hyped up about this product, which he says is way ahead of anything currently available. In brief the system works by remote monitoring *and controlling* a number of Vega wireless systems connected to the Media Link VNOS bus. What you need is a control computer like a Mac Quadra or Centris, or IBM compatible 386/486, a Lone Wolf Media Link network bridge to connect the computer to the network, and Lone Wolf VNOS software.

A functional VegaNet interface requires a Vega NE-8 network enclosure, at least one NI-2 network interface module, and one or more Vega R 662B UHF wireless mic receivers.

Ian Johnstone says the system will turn channels on and off, allow pre-programming to switch channels and scenes, and monitor every aspect of performance. In this regard he says it is way in advance of anything currently available.

New Rane 56 band EQ runs on MediaLink

One sixth octave EQ in one rackspace, without anything on the front panel. This is the future, the new NEQ 156 is controlled via a glass fibre optic interface using Media Link. The EQ sits down in the analogue audio zone, quietly. You control it on your PC or Mac. Natural logic!

Next issue of *Connections* will feature **Wireless Microphones**, with a **Wireless Microphones Buyers Guide**. For info. about the VegaNet product call Johnno at Mark IV Australia (02) 648-3455.



Philips firmly drop Digital Compact Cassette prices - and the picture (above) supplied by the ever helpful George Sprague at Philips firmly illustrates this tightening, muscular physical market grab. This is the wholesome Sue Stanley, who is, of course, the national aerobics champion, who is modelling the DCC130 (\$699) player. The DCC600 recorder is now \$799 retail, a cool grand less than before.

MUSIC INDUSTRY NEWS

◆ **THE NEXT BIG THING** is the first weekend of the Melbourne Music Festival, the culmination of a 3,000 tape national search for the "acts most likely to". The Festival Clubs will feature 50-70 new music acts from around the country, selected by special A&R panels of prominent industry members, punters, major record company A&R personnel and reps from publishers, agencies and management, will see the cream of our up-and-coming talent go through their paces. (& get paid!) **CLOSE OFF DATE:** Dec 20th: apply to the Victorian Rock Foundation, (03) 696-2022. **QUICK!** **EVENTS:** 11-13 February, at various premier live music venues. Watch the press, then go see!

◆ **BASF WORDS & MUSIC** is the song contest offering big time prizes, also held during the Melbourne Music Festival. The Words & Music contest and The Next Big Thing are both coordinated by Russell Deppeler, who was manager of Men At Work. The Victorian Rock Foundation are responsible for sorting out all this. Call (03) 696-2022. The Festival runs from Feb 11 through Feb. 20th, and funny enough - it's in MELBOURNE!

◆ **STAYIN' ALIVE** is an initiative of AUSMUSIC, who have surveyed the industry at large with a Questionnaire that attempts to identify the problems faced by the music industry. With the questionnaire closed, AUSMUSIC have just held a national survey of venues and live entertainment in each state, which will enable AUSMUSIC to gauge the number of performances in each state, covering all styles of music. We'll keep you posted. *AUSMUSIC can be contacted on (03) 696-2422.*

◆ **MUSIC RETAIL REPORT:** The current issue of Australian Music News, the official magazine of the Australian Music Association, carries an interesting report from President (and Yamaha Australia GM) Philip Burn. Philip recently attended the NAMM Economic Summit for the Music Products Industry, and reported that the Aussie consumer was spending 30% less on music products than a decade ago. The music products market here rose from \$160 million (retail) in 1982/83 to a peak of \$267 million in 89/90, falling back to \$254 million in 1991/92. Join the AMA to find out more. *Call Margaret Labruyere (02) 418-6234.*

VENUES

Two more live venues have gone down in Perth. The Melbourne Hotel in the city, for many years the cornerstone of alternative culture, is destined to become an executive business club, while the Broadway Hotel in Nedlands, a watering hole for students at the University of WA and an excellent launch pad for new bands, will become an Italian restaurant.

The Sandringham in Newtown, Sydney, has been sold and its future is uncertain. Bands will be on until Christmas.

The Freezer in Sydney's Paddington has reopened under the new name of Icebox.

Club Savage opened on October 22 in Melbourne. The weekly club is open on Fridays and boasts a 24 hour licence, outdoor area, three pool rooms, six "comfort zones" and two dance floors. It is run by Razor Promotions and can be found at 529 Bourke Street, phone (03) 419 4110.

Cafe Luna on North Terrace in Adelaide has opened House in Order, a new Thursday night dance club. The venue has been renovated and features a downstairs restaurant. Call (08) 232 0860 for more info or drop in to Level 1, 199 North Terrace.

Zen Promotions of Enmore's Vic On The Park fame in Sydney have resurrected the indie Vulcan Hotel in Wattle Street, Ultimo. The venue will run bands on Saturdays until Christmas when it adds Thursdays and Fridays.

Gavin Lewis at Zen is handling bookings on (02) 519 6934.

Melbourne's The Public Bar has added bands on Wednesdays to its weekly live line-up. Find it at 238 Victoria Street, North Melbourne, phone (03) 329 6522.

PRODUCTS

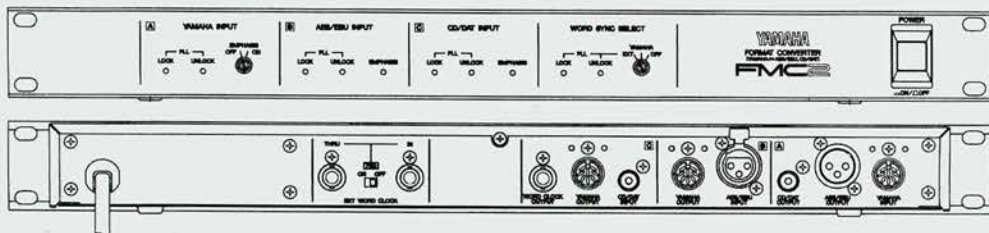
YAMAHA FMC2 DA FORMAT CONVERTER

Yamaha's FMC2 is a 2-channel digital audio signal format converter with three independent converter sections, all able to operate simultaneously. It's ideal for interfacing AES/EBU or DC/DAT digital formats with Yamaha digital audio equipment. Also, with the increasing use of D1, D2 and D3 format VTR's, the FMC2 simplifies Yamaha digital audio

interfacing for video applications.

Each section features front panel LED indication for PLL Lock and Unlock. A BNC connector is provided for external wordclock synchronisation, with front panel selection and status indication.

Call Yamaha Pro Digital Group on (03) 699-2388 for more info.



NEW HIGH-END SOUNDCRAFT CONSOLES

Soundcraft's new Vienna II is equipped with all the features of its predecessor with key enhancements for today's live sound applications.

Available with or without VCA control, the Vienna II includes a new, wide range input amplifier so the same connections can be used for mic and line level sources, an improved four-band EQ sweep EQ section with dedicated sweepable high-pass filter, individual pre and post switching on all eight Aux sends and a new VCA Grand Master module for improved operator control.

With eight mute groups, optional stereo input modules and a matrix section for theatre applications the Vienna II is suitable for both installed applications and on the road.

The Vienna II is available in 24, 32 and 40 input versions.

ON-STAGE CONSOLE

Soundcraft's latest SM16 16 bus console was designed with help from some of the world's top monitor engineers specifically for on-stage use.

Available in 32, 40 and 48 input versions, the SM16 readily connects to other consoles for submixing. Its dedicated stereo output can be used

to generate a sidefill mix and allows the console to double as a front-of-house desk if required.

A unique logic controlled soloing system gives engineers instant access to any signal and all output solo points are switchable pre or post insert for



quick comparisons.

All controls are logically positioned and clearly marked, and all major switches are illuminated for better visibility in low light. Additional features include a new input section with extended gain range, and electronically balanced inputs and outputs. Call Jands: (02) 516 3622.

XTA FOR STUDIO CONNECTIONS

David Sloss's new Melbourne based distribution firm Studio Connections have added X.T.A. Electronics to their range. XTA make some useful audio processing, including the DS 400 mic/line distribution system (below). This serves multiple feeds,

with four outputs per channel and four channels total. The unit eases grounding hassles, and can be used for an active foldback/monitor to FOH split or in contracting applications. Price: \$1745 inc. tax. Call Studio Connections on (03) 723-4300.



VENUES

The long awaited Tivoli in Sydney's George Street is now available for functions with capacity for 2000 and a 24 hour licence. A huge opening party is planned for early next year and band bookings are trickling in in the meantime. (*Seeing is believing.* -Ed)

Call Charles for more information on 018 242 666.

The Sydney Morning Herald's Metro section featured a look at Sydney's prominent rock venues and the live scene in general a few weeks back, prompted by the closure of live venues such as the Hopetoun in Surry Hills, Camperdown's Marquee and the sale of the Sandringham in Newtown and the Annandale. The blame was laid upon radio not supporting bands and apathetic punters...

Napoleon's in Sussex Street, Sydney, has survived a change of ownership and will continue presenting bands. Call (02) 299 3816.

Sydney's Zetland Hotel is expanding into a 700 to 800 capacity venue and is planning to run major league bands from January. Phone (02) 698 3195.

MOVES

The new Mayor of Randwick is none other than Chris Bastic. better known over the years as a band manager, booker, tour manager, promoter and Musicians Union rep.

PI Entertainment has closed down after three years and boss Simon Kain has moved to the APA booking agency. He can be contacted on (02) 360 7177.

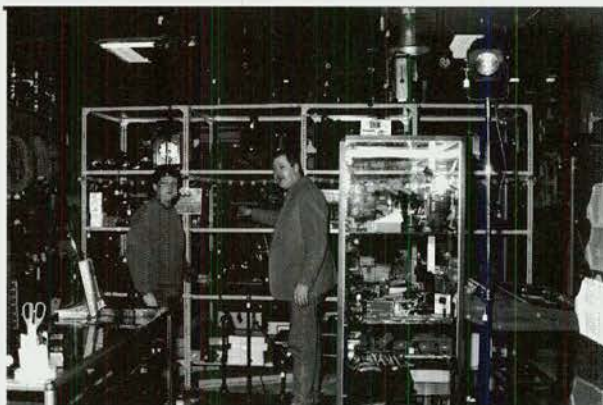
The Music Sales Group has moved to 4th floor, Lisgar House, 30-32 Carrington Street in Sydney. Phone (02) 299 8877. fax (02) 299 6564.

CC's Expand

Giving doom and gloom the thumbs down, Roger Clapton and his team at CC's Light & Sound have expanded rather dramatically, opening a second store called CC's Stage & Studio. Located at 538 City Road, South Melbourne, the new place is considerably upmarket from the existing cluttered but neat store at Moorabbin.

The difference is that Stage & Studio in South Melbourne will sell only new lighting and sound, whereas Light & Sound at Moorabbin will sell used 'pre-loved' gear, as it always has. Moorabbin is the tidiest 2nd hand store I've been in - the emphasis is on selling gear that doesn't come back bung the next day, so they pretest and clean everything. Like a used car yard, minus the shark in a suit, maybe?

CC's has been selling more and more new gear in recent years, thus leading Roger to take the big gamble on the new store, which has name brand gear actually on display in a manner that invites 'hands on', a professional approach. Moorabbin: ph (03) 532-0488, Sth. Melb: (03) 690-3999.



Warner Chappell's National Professional Manager Deborah Feck has left the company to travel overseas and is replaced by Jane See.

Former General Manager at Australian Talent International, Jeremy Hutton, has formed Little Buddy Enterprises and can be contacted on 018 442 245. He will continue to manage Melbourne's Starworld and to tour manage Rose Tattoo.

Hutton has been replaced at ATI by Dana Gilbert, previously with the Harbour Agency and Mighty Management.

Meanwhile the ATI group are now taking care of entertainment at the Metro Theatre in George Street, Sydney.

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PEOPLE & MOVES

AUSTRALIAN MONITOR announces the appointment of Mr. Ian Dash to the position of Design Engineer. He brings valuable microprocessor experience and digital audio knowledge for the next generation of 'Smart' product.



NEW AREA MANAGER FOR AMPEX

Ampex Media have appointed Mr Peter Hutt (left) to the position of Area Manager after the resignation of George Sullivan. He will be responsible for all Ampex Media product sales in NSW, WA, NT and ACT.

LSC Electronics Move

L.S.C. Electronics have moved to: 7 University Place, North Clayton, Victoria 3168. The new phone number is: (03) 561-5255, new FAX is (03) 561-5277

ARTECH SYSTEMS AUSTRALIA has now fully relocated to: Unit 25, 12 Edina Road, Ferntree Gully, Victoria 3156. Phone (03) 752-4088 and Fax (03) 758-3686.

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KATHY HOWARD

Artist manager & industry identity interviewed by Catriona Forcer

Kathy Howard is a familiar face in the music business having been in the management field for many years. She began her career in the late seventies as a junior to the celebrated Michael Chugg where she learnt many skills in the area of management.

"Michael was fabulous and I'll be indebted to him until the day I die," Kathy said. "He's one of the biggest chauvinists in the industry but at the same time he's very liberated. He's a very hard task master, second best is not good enough and there was no room for mistakes."

Kathy then went onto work for Radio 2SM as their Promotions Manager moonlighting as manager for 1927. Eventually the work load became too much and management became full time. As well as 1927, Kathy has managed Crowded House, The Choirboys and her latest band is the funky Happy House who have been receiving rave reviews for their debut 7 track CD.

"The project is self-funded, having formed the F.O.O.D record label, so we have a great degree of artistic control," Kathy told me. "I can be a manager, a record company general manager, chief executive of Happy House, the chief publicist for the countries national campaign of PR for Happy House as well as all the marketing. It wasn't what I envisaged initially, things just grew. I thought 'what the heck it's things I've done before over the years' and I went for it. They only gig about once every three months as they're not just a band going on stage. They set up their own stage, they decorate it and there are performances that go on before them so the entire night is an entertainment."

Kathy admits she's a workaholic getting, if she's lucky, on average five hours sleep a night. Up until the last six months, she has spent a decade touring Australia and the world.

"I've deliberately restructured my life for more stability - being in one place for a length of time," she said. "I didn't want to live out of a suitcase any more. It was necessary for me more than anything to do with business. I rise about 6am to do a lot of work behind the scenes on the computer between 7.30am and 9.30am when most music industry people come on deck. There's a lot of administration and planning work to be done as well as time on the telephone. With also going to gigs, the week is always jammed pack and I find by Saturday night I need some quiet time to recharge my batteries. I'm good at organising other people and telling them what they don't want to hear! I really enjoy taking on a project, like Happy House, and seeing it through especially when the media come back to me and say they've enjoyed the music. That's why I'm in the industry - because of the music - and

not because of any other reason.

The most difficult part of a manager's job is to create a vibe and that's what you have to do. And once you've created it, you have to maintain it. You have to have a campaign to create the vibe. It's basically a fashion industry. Also you always have to give over 100% all the time. If you slip, there's always someone ready to move into your position."

Surprisingly Kathy reckons she doesn't have many problems in the industry being a female. Her advice is just to go for it although there are the physical areas where females cannot compete.

"You just make sure you introduce yourself to the people who need to know you," Kathy said. "Most men like working with a female, they enjoy the attention they get. I was once doing a Choirboys gig at Mildurra and after they had performed the song 'Boys Will Be Boys' a woman got up and started really berating the band. This yelling session went on for quite a while and, along with her friend, she started getting hysterical. The lead singer told her to leave, ask for their manager and she'd get her money back. Security escorted them out as they were by now getting physically violent. I asked the girl if I could help her and she kept demanding to see the manager. She couldn't acknowledge that another female would be the bands manager. So there you have the chauvinism totally being on the other end of the scale."

Kathy admits her personal life has suffered due to her work.

"Most people in the music industry have the scar of at least one divorce," she said. "I don't have children, I just have band members!"

Kathy is also currently working for the 'Staying Alive' project for AusMusic as their NSW coordinator. The project has her putting the live contemporary music scene in NSW under a microscope. The end result will be a paper for AusMusic to incorporate with other State's reports for presentation to various government bodies.

"Hopefully it will have in it six to twelve good, concise ideas that the federal government and its various departments could absorb to help the live music scene," she said. "Alternatively the industry might dictate to me 'let market trends be market trends'. Because I'm doing the report I'm doing my best not to contribute to the report, if that makes sense. It would be too easy for me with all my years in this industry. I'm trying to keep a distance from my own views and opinions at the moment. A lot of response that has come



Profile

back so far is about the licensing laws which have caused great grief. Also the fire laws are a problem although also quite valid, they're very prohibitive to the music scene of the nineties. The industry is filtering it's opinions through me because of my understanding of the jargon and politics."

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GLANTRE HERE

Glantre Engineering Ltd, one of the leading contractors for theatrical lighting, sound and rigging installations, are continuing to expand their international business base by establishing an Australian subsidiary company - Glantre Engineering Ltd. The directors of Glantre's first operation in the southern hemisphere are Derek Gilbert, Managing Director of the UK parent company and Henry Lewis. Henry is a Melbourne based specialist in structural steelwork who obtained his B.Eng. in Civil Engineering from the University of Tasmania.

Australia was chosen for Glantre's first Asia/Pacific base after very special consideration. Director Derek Gilbert said "The country has thriving manufacturing facilities and excellent technical resources pertinent to our field of work. This coupled with a perfect strategic location make Australia the ideal location for our corporate expansion".

Also, Glantre have announced their first Australian contract to provide a complete technical systems package for the reconstruction and extension of the Capital Theatre in Sydney. This fine 2100 seat theatre with its excellent sightlines and acoustics was first opened in 1928 in a blaze of gilded glory. Since its closure in the early 1980's the ravages of decay have taken their toll on this one time glamorous picture palace.

There are plans to add an additional foyer of 12 metres in width; this will be accomplished by using part of the adjoining Manning building. The area below the extended stage will house dressing rooms and an orchestra pit for 110 musicians. A concrete subfloor under the stalls will render inaudible the rumble of trains that pass beneath the Capitol.

Glantre has been selected as subcontractors to Fletcher Construction Australia; they will both be working in close co-operation with theatre Consultants, Entertech. Clients for the projects are property developers Ipoh Garden Developments

(Aust.) Pty Ltd and Sydney City Council. Glantre's subcontract (worth \$A 1.05 million) encompasses the supply and installation of 101 single purchase counterweight suspension sets, 4 motorised rigging sets, 24 cable reeling drums, safety curtain and 9 motorised auditorium ceiling traps.

The scope of work also comprises sound, communications, stage management systems, an extensive DMX network and houselight dimming. Glantre's principal subcontractors include Australian companies, ITE, Creative Audio and LightMoves Technologies. Henry Lewis is handling site management with support from UK based manager, Matthew Tonks.

Contact Glantre 03 817 5852.



New Phonic

The new 4-Bus Phonic mixers, the M1642 and M2442 (16 and 24 channel) feature 6 aux sends, sweepable mid EQ and two stereo returns. They are priced keen from \$3395.

An even keener price is attached to the phonic PMC B Series, with 3 aux sends, 3 band EQ and available in 8, 12, 16 and 24 channel models. From \$950 to \$2095 retail.

Details on Phonic from CMC: (02) 905-2511.

MOVES (cont)

Radio National General Manager Norman Swan has been replaced by Peter Manning, formerly the ABC's news and current affairs editor.

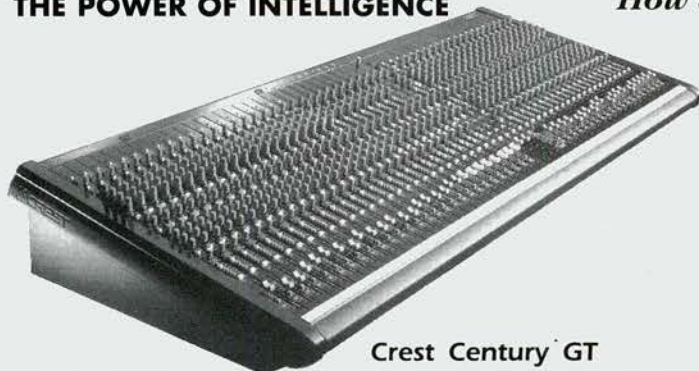
New State Manager for Phonogram in South Australia is Sue Hill. Hill was promoted from the promotions department in NSW.

Nightmare Music, the company behind tours by Head Like A Hole, DOA and Matthew Sweet, can now be contacted on (02) 587 0350, fax (02) 553 8883 or mobile 018 215 374.

Andrew McManus Management has moved from Potts Point to Suite 101, 3 Small Street in Ultimo. Phone (02) 211 3044, fax (02) 211 3057.

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Write in Reader Service number: 122



OTARI have released the Concept 1 audio console (above). Full details in February Connections.

ESA FOR SPACIAL IMAGING

MicroAnalog GesmbH of Austria have appointed EAS Audio as the Australian distributor for the unique DYNATRIX range of Acoustic Spacial Imaging Systems.

The system makes use of the well known "Haas Effect" which states that we acoustically localise a particular sound source from the direction from which the first sound wave to reach us originates. The DYMAMIX system spacially 'places' sound using this principal to give a more natural sounding reproduction of amplified material for theatre, opera, popular music and other live performance. The system design has maximised accurate directional and range-finding reproduction, balanced tonal colour and the immersion of the listener in the exact acoustic atmosphere of the stage action.

Spacial Imaging uses a signal matrixing & delay system under computer control and can either be fixed or use pre-programmed cues to follow actors throughout an entire performance. The system can give manual control to follow errant performers who may forget where they are meant to be.

The system can accommodate as little as 8 inputs to 4 outputs up to 256x256 matrix. Call ESA on (03) 562-4605 for more info.

CAD Condenser is \$329 retail

Australian Audio Supplies is now distributing the complete range of CAD microphones. This now includes the "pro Performance" and the "100 Series" microphones. Highlights are:

- CAD 92 -Sound Reinforcement/recording electret condenser microphone for vocals and the crisp highs necessary for cymbals. RRP \$329
- ST 100 -Surface mounted boundary microphone. RRP \$399
- CM 100B -Hanging mini-gooseneck microphone, intended for use with choirs, orchestral or concert performances, and meetings. RRP \$399

CAD microphones are respected worldwide as great sounding microphones, according to the PR from A.A.S. It goes on: "Rugged construction, impeccable craftsmanship and unique cosmetics help make CAD microphones the best dollar for dollar value in the industry". Wow. All CAD microphones are designed and built in the USA. Call David Croxton at AAS on (018) 432-910.

BITZ BYTES & THINGS

◆ **ROCKTRON USA** have a new Guitar Rack creature, the Progap Ultra guitar preamp. It's got HUSH noise reduction, and retails for \$1399. Call CMI (03) 315-2244

◆ **DIGITAL SOUND SYSTEMS** are the Aussie and NZ distributors for the Soundscape Digital Hard Disk Recorder. Call 61-9-366-0554.

◆ **LIGHTMOVES** say **LASER** of 350 Upper Roma Street Brisbane are now Le Maitre Pyrotechnics and Smoke Machine dealers. Call LASER on (07) 236-2333 for your next Bang Flash or Pop.

◆ **SMPTE** say Multimedia will be covered for the first time at SMPTE conference and tradeshow in July. They've sold 70% of the floorspace available at the tradeshow, call Bob McAnderson at Expertise Events, (02) 977-0888 for more.

◆ **APOGEE** analog to digital filters are now available for hire from Damien Gerard Sound Studios. They have already been hard at work on Daryl Braithwaite and Jenny Morris sessions, and are flight cased and ready to go anywhere. Call Marshall on (02) 692-9915.

◆ **dB Audio** of Kew Victoria are Nagra distributors, the new Nagra D is a four channel digital audio recorder that sets new standards they say. Call Ewan Coldrey on (03) 853-1070.



MEDIA REVUE

By Jennifer Temm

Publishers of *Encore* and *Encore Directory*, the Trade News Corporation, has sold all its titles to Reed Business Publishing, phone (02) 372 5222.

The Rolling Stone organisation is launching two new titles: teen mag *Cool* and video games mag *Hyper*. *Hyper* got into *Hyper* trouble upon launch, with the Moral Lunatics slamming the inclusion of some naked sex video game reviews. (Yeah! - Ed) Then they sold another 100,000 copies!

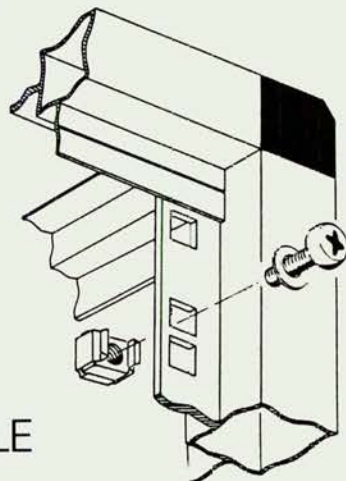
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CCT RETURNS



The circle has been joined in the lighting market with the comeback of UK lantern manufacturer CCT after a few years absence- due to the firm going into receivership in 1991. Rosco Australia will now distribute CCT, the deal was consummated by CCT's Don Hindle and Rosco Australia's Ian Baseby, who recently toured the Eastern States in Baseby's Falcon to bring the news to dealers.

Rosco has sixty dealers, according to Ian Baseby, whereas market leader Selecon selectively distributes, while Strand is handled mainly by branch offices of Bytecraft. This all adds up to a viable niche for Rosco Australia with CCT.

Don Hindle is content when I tell him the Australian market will take a while to get going again for CCT, he takes a longer view. Indeed he had some product on display at Rosco that is innovative indeed, and we will deal further with this in February. Meantime Ian Baseby says his number one priority has been getting spare parts together for CCT users - and there are many around the land.

Call him on (02) 906-6262.

CD BUREAU IS NEW!

Greg Simmons, recently appointed our Studio Editor, has also announced his new venture with his nice young friend Jodie Sharp - the CD Bureau! The dynamic duo who reside in a gaudy Penthouse unit near Central will burn you a CD on their CD recorder for a very reasonable fee.

The deal is this: you send your DAT master over, Jodie takes up the story: "when a client leaves a recording studio they usually take a cassette with them. But these days most studios are mixing onto digital systems such as DAT, and the cassette doesn't do justice. People think of CD and they think of mass production, but we can do one or two discs at a time for a very low cost".

The cost runs out at about \$79 each for 10, there is a sliding scale, and a discount for studios. Disc sizes and durations vary up to 74 minutes recording time. Call Simmo or Jodie on (02) 310-4291. They pickup and deliver too.

GOTHAM AUDIO GOES VISUAL

Gotham Audio, co-owned by John Farnham and Ross Fraser, have purchased an AVID MEDIA SUITE PRO, a non-linear digital video editing system, allowing post-production of music video clips at their studio. Multi media rules!

Gotham audio's system also features the 2 field JPEG option for broadcast betacam picture quality and COSA After Effects software enabling video layering for effects such as embossing and watercolour.

Music tracks digitally recorded and mixed at the studio can now be directly imported as digital CD quality audio files into the Media Suite Pro for cutting video to music, then mastered onto video for distribution.

Call Neil Howe at Innovative Sound & Media Technologies for more info. (03) 416-9688.

NEXT DEADLINE JANUARY 15th.

MEDIA

(continued)

Some 30 industry reps gathered at the recent AIMS show in Darling Harbour to discuss the problems of the live music industry. One assertion for discussion was the loss of radio as a major promotional tool because of the trend to "golden oldies" style programming.

The response?

None. No radio reps bothered attending.

Melbourne's *Inpress* and Sydney's *Drum Media* have refused to run advertising for Apple House, the controversial Adelaide-based company releasing unauthorised live CDs by artists from Michael Jackson to Stevie Ray Vaughan. Their respective competitors *Beat* and *OTS* have had no such qualms.

Theatre Australasia joins *Opera Australasia* in David Gyger's Pellinor stable next month. The new 20 page tabloid format publication is the only magazine covering theatre in Australia and New Zealand and will be available through subscription, performing arts centres and some theatres.

Call Pellinor on (02) 247 2264 for more information, or McLean Media Representations on (02) 519 6455 for advertising enquiries.

Bumper issue season is on us again with the street press raking it in from new releases and tours.

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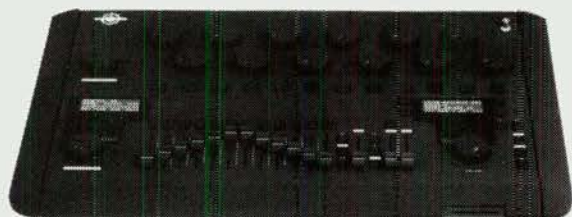
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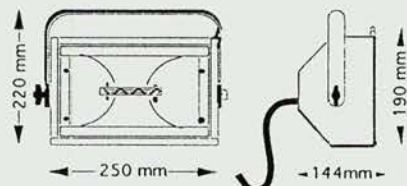
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Digitech

A Harman International Company

Look at me when I'm talking to you!

Barry Humphries, alias Dame Edna, Sandy Stone, Sir Les Patterson or Daryl Dalkeith, is currently touring Australia for the first time in eight years with his new production "Look At Me When I'm Talking To You". As with his previous tours, he opened in Adelaide before moving on to the State Theatre in Sydney.

The ever busy Roger Barratt is the lighting designer for the project, staying with the show for the first three days in each city whilst juggling other commitments.

"The cyc is meant to be 5 meters across and curved but, because of this theatre, you end up with a lot of black masking and a tiny cyc at the upstage end," said Roger. "It's still basically the same size as the large version with the same number of lighting positions, it's just less lamps."

The show is geared to move in on one day, rigging in the morning and focusing by the evening plus the following morning, and open the next after an afternoon rehearsal. Roger was not given a particular brief although Barry Humphries did talk about a number of looks he wanted.

"It's not a complicated show," he said. "It's a matter of keeping a little atmosphere and as Barry is onstage for three hours, keeping him happy and feeling secure. I make sure he's not over lit or under lit. He likes to see the audience so I have to light them to a level that they are not aware of. I do this by cross lighting them from the box booms at the front, or in this case from the circle front, picking a lighting position that is behind their eye line. Barry can see the first five rows quite clearly so if you don't want to be picked on don't sit there!"

The lighting is fairly basic theatre lamps - about 100 lamps consisting of 2K fresnels, 1K fresnels, 1K profiles - hung on four spot bars. There are four colour washes and most of the evening is performed down stage in the first four meters of the stage. There are a couple of full stage scenes - the end of the show and the Sandy Stone scene. Scenery includes a motorised chair that rolls down and is driven by a floor technician upstage centre by close circuit. Another trick in the show is a motorised 'smoker's stand' which is controlled by a remote control out of a car. There are two followspots on the show, two floor electricians, a head electrician and six mechanists.

"There are other scenic elements but I don't want to give the surprise away," said a coy Roger. "There's a finale set which features a large pair of glasses that chase, a supermarket set and a few other surprises that are part of Edna!



I've reduced the show down to sixty channels and, in this theatre, we're using a Jands Event Plus. That's really as low as it can go. In Adelaide we had a Gemini but I've designed it so it'll fit into anything that is sixty channels and that is capable of doing a couple of chase sequences.

In mid-December the show travels to Melbourne and after Christmas to Brisbane, Perth, New Zealand, Melbourne again and possibly South-East Asia. The performances at the Newcastle Civic were cancelled because they were not sure if the theatre would be finished in time for the show. Also they could only fit in two days between the Adelaide and Sydney shows and so they were reluctant, with so much crew, to go there as they would not make money. They hope to return there for four dates later in the tour.

Roger Barratt is currently working on some corporate shows as well as designing "Me & My Girl" which he has been doing for four years. He'll also be transferring "The Rise and the Fall of Little Voice" for the Sydney Theatre Company down to Adelaide. In fact Roger usually does about twenty-five productions a year.

● Catriona Forcer

BACK ISSUES \$5 each

All Connections issues since inception in February this year are available in limited numbers at \$5 each including postage.

HOLIDAY SPECIAL: Any FOUR for \$15!

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Melbourne's *Beat* are averaging 80 page issues on 70 per cent advertising, well up from their winter lows, with their competitors *On The Street* and *Inpress* a fair way behind at about 60 pages on 65 to 70 per cent.

In Perth *X-Press Magazine* is running strong at 72 pages on 60 to 65 per cent, while Adelaide's *Rip It Up* and Brisbane's *Time Off* are steady at about 52 pages on 60 per cent and 32 pages on 62.5 per cent respectively.

The third issue of *Juke* in the new A4 format remains at 64 pages with advertising slightly up on the October issue.

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Rates: \$50 to \$60 (single), \$60 to \$80 (double). Suites available. rehearsals on application.

AUX 2

INSIDER NEWS for THE SOUND, LIGHTING & STUDIO BIZ

News from Music Capital Productions, Tamworth that Grant Walden and his wife Leanne (nee Alderson) are the proud parents of a baby boy Joseph Daniel born October 22, 1993; 7lb 11oz; 20" long. Joseph is now keeping Grant and Leanne awake all night with the usual crying etc. There's no turning back now Grant!! Congratulations.

MEDIA RELEASE

Amazing New Fully Self Contained Unit
Dateline: Tuesday 2nd November 1993,
Melbourne, AUSTRALIA.

The McGeorge Nuclear Family Company are very proud to announce the arrival of their latest product. This self contained unit, which has taken nine months to develop, was finally completed 3.44am Tuesday morning.

The Head Designer, Mrs Mary McGeorge is very pleased that the task is finally finished and stated she is quietly confident this new product will become a major asset for the company.

Product Dimensions:

Length: 50.5cm (20"). Whilst we understand that

this is somewhat longer than the conventional 19" rack size we assure prospective owners that this will not be an impediment to full utilisation of this item.

Weight: 3260 grams (7lb 3oz). This we have been assured by the technicians overseeing the manufacturing process will tend to increase rapidly in the ensuing period ahead but may also be accompanied by a rather significant reduction in the disposable income of the prospective owner. R & D are uncertain as to whether this can be eradicated from the present design.

Connectors: The unit comes complete with in-built male connector but it is felt some work will need to be done before this feature is fully operational. Unfortunately, it has been projected by R & D staff that this may be quite a few years away.

Built in Features: The unit comes equipped with a self regulating sleep deprivation timer with auditory alarm which is fully automatic. The R & D staff are still working on over ride facility.

Model Designation: Unfortunately to date there has been a lack of concordance as to the Model designation but this should be ironed out in a few days.

Our congratulations to Mary and Graeme McGeorge. For those who don't know, Graeme is one of the ESA Audio team. Hey Graeme, maybe you could utilise the Sig Tech AEC1000 to control the nursery acoustic dynamics?

ACCOM (cont)

The Hotel Como
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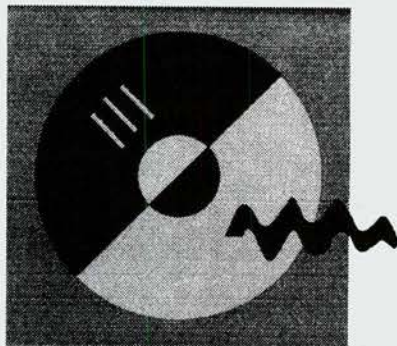
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- EDL Import
- Time Compression/Expansion

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Write in Reader Service number: 126

AUX 2

Maybe the dawn of improved working relationships between the Lighting & the Sound Departments at the Sydney Opera House is the marriage between Martin Hansford (audio dept) and Louise Fisher (lighting dept) late November. Congrats to the happy couple!

Looking to cut time out of your planned tour? Charter pilot Peter Sagar reckons he can fly a party of 6 for about \$24 per 100k each - thereabouts. Plane hire is not dear, the editor says you cant rent a six seat aircraft for \$160 an hour, including fuel, (if you fly yourself) and in an hour fly almost 300k in a straight line. Well, almost a straight line - but you know what we mean. Dont you? Anyway, back to the plug. Call Peter Sagar on (02) 791-9031.

Colin Hill at Freedman has had the operation he says, and become a fully fledged Aussie, despite his accent. Col hails from the old dart.

A Canadian has invented an automatic confession machine that takes the pain out of admitting wrongdoings, according to press reports. The machine has

an Amen button, neon cross and winking christ. Sounds like a MUST for the backstage area on your next tour!

While some less than kind lighting people in Melbourne were having fun at the expense of poor River Phoenix, the rest of us were punting on the Melbourne Cup. Still, the staff sweep wasn't anywhere as good as the River one, where you had a choice of 16 different drugs. Typical lighting people, we didn't know there were 16 social drugs in existence, but we still don't count coffee!

Another report from the far side, this time the Boss That Bites. Fortune Magazine in the USA details the Psycho Boss From Hell who wrote a memo threatening immediate dismissal for anyone adjusting the office thermostat. He also demands anyone taking time off for a funeral show a copy of the death notice. Another entrant demanded his employees bark like dogs to get their pay cheques. We like that one. The ex-military guy who like to 'playfully' choke and bite his employees was perhaps suitable for a future career as a band manager!

SEND YOUR GOSSIP to the AUX 2 lowlife:
PO Box 439, Epping 2121 NSW, or Fax:
(02) 876-5715.

MYSTERY PACK ARRIVES!

While we are flattered that Australia Post must acknowledge we are the only regular, monthly magazine of any kind servicing the music industry, we're not so sure about the early christmas pack we received recently. Clearly lost for some time in The System, it contains an Alesis HR-16 drum machine, various back copies of Connections, a letter to 'Dear Chris' from Kate and three CD's. Now being honest folk we are holding this package until the proper and correct owner comes forward.

A clue: the pack is addressed to Christopher Grae at Honeycombhill Studios in Brunswick Heads NSW. Obviously Chris isn't there any more, because all the back issues of Connections were unwrapped.



We don't know how the box came to us, maybe the occupant of the address in Brunswick Heads got tired of receiving things for Chris Grae? Who knows.

Anyway, the true and correct owner will be able to identify the titles of the three CD's in this fun pack, so get on the phone to Elaine in our office - (02) 876-3530 and try your luck!

MC

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Write in Reader Service number: 127

Events

LIVE Show, London 18-19th January.
NAMM, Anaheim Jan 21 - 24th
HiFi on Tour, Thailand Jan 26 - Feb 1
MIDEM, Cannes France Jan 30 - Feb 3
TUYAP Musicavision, Turkey Feb 5 - 9th
SCIF, Sandown England, 8 - 9th Feb
BROADCAST THAILAND, 13-15 Feb
SIEL, Paris 13 - 16 Feb
AES Amsterdam, Feb 26 - Mar 1st
SATIS, Paris March 6 - 10
MUSIK MESSE Frankfurt March 16 - 20
SIB-RIMINI, Italy, March 27 - 30
NAB, Las Vegas, March 21 - 24
ELENEX, Thailand, March 24 - 27
NSCA, Las Vegas, 6 - 8th April
USITT, Nashville USA, 13 - 17 April
ISBM Italy 22- 25 April
EXPOMUSICA Spain 10 - 13 May
Pro Audio, Light & Music, Beijing May 7-11
BROADCAST MADRID '94 11-15th May
BROADCAST ASIA, Singapore 1st - 4th June
INFOCOMM Anaheim 9th - 11th June
RADIO MONTREUX Switzerland 9th - 11th June
World Lighting Fair, Tokyo, 16 - 18 June
APRS London 22nd - 24th June
SMPTE '94, (Sydney) July 5 - 8
Pro Audio & Light Asia, Singapore July 6 - 8

I.A.A.M. Minneapolis July 30 - August 1
PLASA, London, Sept 11-14
ENTECH '94, SYDNEY 6 - 8 October
AES 97th, San Fransisco Nov 10 - 13
LDI Reno USA Nov 18 - 20

NETAA SEMINARS

Pyrotechnics. Jonathan 'Le Maitre; Ciddor will overview pyro effects and safe use. On: Tue 15 Feb, '94.

Voice Reinforcement. Intro to voice reinforcement techniques, by Michael Summons. On: Tue 15th March, 1994.

Venue for above: Rafferty's Room at the Riverside Theatres, cnr Church & Market streets, Parramatta. To book call (02) 697-4860. Price: \$25 (NETAA members/ students), \$50 others.

Your EVENT here: FAX the details to us by the 15th of the month for inclusion. Plan ahead!

ACCOM (Continued)

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& Towers
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Fax: (07) 835 4960
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Located in the heart of Brisbane's commercial district the hotel combines Sheraton Towers, with 54 well appointed rooms including seven ultra-deluxe suites occupying the top three floors, and the Sheraton Brisbane Hotel with 357 rooms including 8 suites.

Services and facilities include function rooms, convention and banquet facilities, the Clark Hatch Fitness Centre, bars and restaurants.

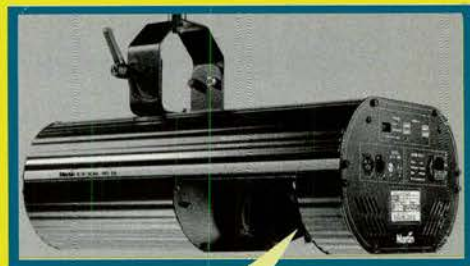
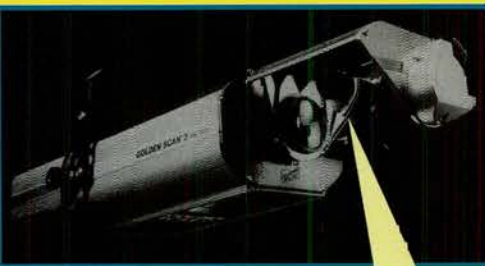
Jenny Temm, responsible for all the news in these 'BLACK' columns, has left Connections. We wish her well for 1994!



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OPEN YOUR MIND WITH AUSTRALIA'S LARGEST INTELLIGENT LIGHTING COMPANY

Phil Tripp Writes....

It's interesting (and sometimes horrifying) doing the Australasian Music Industry Directory but it serves as a great insight into the industry itself. I thought for this month's column, I'd share some of these gems since I'm a week past the final deadline and three days in front of leaving for a Hawaiian rest cure. (*You wuss Tripp -Ed*)

Because we produce the directory twice yearly, we get an incredible number of calls from people who assume we operate a research service for them. Or they demand we look up numbers for them when they forget their directory at the office.

Because our name with Telecom has two elements "Music" and "Directory", operators give our name out all the time to people looking to check on why their records haven't come from Music Direct, the mail order record house.

And because our number is only two digits removed from a suicide prevention line of a major charity, we do get those late night calls from people who have decided to end it all. Fortunately, I used to be a crisis counsellor and I've probably handled a dozen of these calls. (*Call Phil next time! -Ed*)

But if it's the zanies and loonies we have to fend off at night, it's the sheer volume of faxes, letters and personally delivered screeds which pour in over the year from those who want listings in our directory. Because we want to keep it a working profes-

sional directory, we limit the parameters of listings so that, up until this January's edition, we only listed recording artists or those managed by recording artist managers, studios that were over 24 tracks and record companies that actually released.

We've now changed some of the listing parameters to make it more accessible to a wide range of music industry types and we change with the times. In the next issue we've added **karaoke distributors, narrowcasters and background music suppliers, music events, sponsorships and endorsements, graphic arts** as their own subsection plus an **educational resources** section.

We've also changed two sections of interest to Connections readers. What were once Musical Instrument Retailers and Studio and Musical Equipment Wholesalers has been enhanced, expanded and researched to be **Professional Audio, Musical Instrument, Lighting and Production Retail & Hire** plus **Professional Audio, Musical Instrument, Lighting and Production Distributors**. These two sections will encompass a larger cross section of suppliers to the industry at the same time signalling a major shift in our direction.

As readers are probably aware, we have a strategic alliance with *Connections* and in the next few months, we're going to be combining our resources even more. Watch this space!

A.M.I.D. UPDATE

The Latest Directory Changes

- ◆ Max Hart is no longer with the Musicians Union.
- ◆ Allen Allen & Hemsley have changed their fax to—(02) 233 7022
- ◆ T.K.O. Entertainment Agency have moved to: Level 1, 44 Nicholson Street South Yarra 3141 and have changed their ph. no. to: 867 8270 and fax to: 867 8271.
- ◆ Andrew McManus Management have moved to: Suite 101, 3 Smail Street, Ultimo NSW 2007. Phone: (02) 211 3044 Fax: (02) 211 3057.
- ◆ A.T.I. Management's Dana Gilbert is the new General Manager.
- ◆ R.C.M. International have moved to: Suite 4, 193A Lennox St. Richmond VIC 3121.
- ◆ Jeremy Hutton has left ATI Management.
- ◆ "Zac" Maurice Zancanaro has taken over as Venue Talent Booker for Round Midnight. Martin Jackson, the Victorian



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jazz co-ordinator has moved to: 21 Smith Street West Brunswick VIC 3055 and his phone number has changed to: 03 387 4596.

◆ Robin Tenor has taken over as booking agent for Kuranda Amphitheatre in QLD.

◆ Anna Grega has taken over as manager of the Redcliffe Entertainment Centre in QLD.

◆ The Painters Club has changed it's phone to: 03 415 1560 and fax to: 03 416 1290.

◆ Simon Kain has closed down his company of three years. PI Entertainment and has moved to APA booking agency. He's taken a number of the bands he's represented with him and can be contacted on (02) 360 7177.

◆ Performer Grace Knight has just signed a new recording contract with Dino Records.

◆ The new General Manager of Radio National is Peter Manning, who replaces Norman Swan.

◆ Seattle independent label Sub Pop Records has undertaken a new distribution deal with Warner Music Group's Alternative Distribution Alliance, although Shock will remain the label's distributor in this part of the world.

◆ Rochina Iannella, previously Senior Legal Adviser at the Arts Law Centre of Australia has decided to make a come back to private legal practising. Rochina spent the last four years at the Arts Law Centre, advising musicians and other artists from a wide variety of the Arts and joined the Intellectual Property Team at Townsend Partners Solicitors three weeks ago to work with Peter Townsend and dispute resolution experts John Walker and Anna Nanos.

◆ *The Australasian Music Industry Directory* is introducing a "Special Events" section, which will list all the major festivals in Australia and overseas.

◆ Performer Diesel has signed a new contract with EMI Music, the news comes amid speculation that all was not well between Diesel and his record company.

◆ Nathan Keating has left his position as Advertising Sales Person at Hot Metal Magazine to take up his position as Epic label manager, working under Steve Millard at Sony.

◆ NSW State Promotions Manager for Phonogram, Sue Hill, has been promoted to position of South Aus-

tralian State Sales Manager.

Brett Olsen, formerly with MCA Publishing, has taken up the position of Copyright Manager at Chris Gilbey Pty Ltd.

◆ The Music Sales group of companies are now located at: 4th Floor, Lisgar House, 30-32 Carrington Street, Sydney, the postal address being: PO Box C637 Clarence Street, Post Office Sydney NSW 2000. Phone: (02) 299 8877. Fax: (02) 299 6564.

◆ Warner Chappell Music have appointed former AMCOS and MMA music person, Karen Hamilton as Licensing Manager, while former Roland employee, Neil Wilson, has been appointed Marketing and Print Production Manager. Deborah Fleck, Warner Chappell's National Professional Manager since early 1992, will be leaving the company to be replaced by Jane See.

◆ Nick S Marvin, the freelance journalist has moved to: PO Box 240, Doveton VIC 3177. Pt: (03) 793 3945. Fx: (03) 793 2093

◆ Brashs Power Picks have changed address: PO Box 256, Concord NSW 2137

◆ FM104.7's mailing address has changed to: GPO 545, Adelaide 5001. The new General Manager being Mike Andrew.

◆ 5MMM FM in Adelaide has changed its name to three d radio.

◆ Lotus Music have moved to: 295 Bank Street, South Melbourne VIC 3205. Phone: 03 696 6697 Fax: 03 696 0259.

◆ Trafalgar Music's new fax number: 02 664 1623.

◆ Sapphire Music has moved to: 45/75 Drummond Street, Carlton VIC 3053.

◆ A.T.I. Records's Dana Gilbert is the new PA to MD.

◆ Castle Communications have moved to: Level 2, 54 Alexandra Street, Crows Nest NSW 2054. Phone: (02) 437 4844. Fax: (02) 437 4833.

◆ Music Technologies have a new phone number: (02) 369 4990.

◆ L.S.C. Electronics have moved to: 7 University Place, North Clayton VIC 3168. New phone (03) 561-5255. New fax (03) 561-5277.

CALL the Australasian Music Industry Directory; Editor Alison Bruniges; (02) 212-6677, Fax (02) 211-5938, 3 Rose Street, Chippendale 2008. Next directory due out January, thence July.

The Revolution Continues

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LETTERS

*#//@%XX -?!

The editor is bitter & frustrated

Everyone including me, is entitled to their opinion, and I realize that a critic is paid to criticize. However, when a personal dislike for a particular engineer results in a headline such as yours, denigrating the quality of a Tina Turner show, then you have lost sight of your function.

Maybe you are just slightly out of your depth when you begin to diagnose symptoms of tour fatigue, or pronounce that the live sound mixing role for major international acts is not too hard these days. On what do you base such erroneous judgements?

Fortunately, the 1 million satisfied fans (or punters as you so affectionately refer to them), and the 700 quality performances that Mr Natale has mixed for Tina over the last 4 tours, will probably overshadow the attempted slight of a very good sound engineer, by a bitter and frustrated one.

-Rusty Hooker, Private Dancer, LA. (USA)
Gee I'm glad you wrote, Rusty. Like you I've been in and around the Rock Industry for over 20 years. Unlike you I've moved about,

not doing the same old thing, year in and year out. While I'm normally very modest and unassuming, you've forced me to assert my credentials! I guess that aside from years of touring work around Australia, (lighting as well as sound), I'm probably better known for establishing Australian Monitor, a small firm by American standards but gee- highly regarded in terms of audio design cred.

I say the role of live sound mixing for major international acts isn't too hard these days, it's kind of like flying a plane, which I also do. I draw the comparison because flying an aircraft is a mechanical action where you interface with a shitload of high tech equipment to a predetermined routine. Live sound mixing can be like that too, unless you inject some art and finesse into it. EVERY night.

Nothing personal with David Natale either, I praised his Prince mix. I've just made a considered point that his Tina Turner mix left something to be desired. I've said why. This was after talking with two colleagues I trust - Cat Forcer and Caroline Grafton, who

both volunteered a similar view regarding the mix - on different nights - before I had the chance to put it. I don't damn very often.

I've got a very high regard for your employer, who would be better served by people like yourself walking around the venue for quality control, and being objective.

-Julius Grafton.

Tina Sound still lags

The Sydney Entertainment Centre was not the only place that the sound was lagging for Tina Turner. I attended a concert through the front door of the venue for a change accompanied by her good self after gulping down a late delivered meal at the casino next door. We dived into our seats three minutes before blackout leaving me to ponder where the FOH was - as I knew the platforms had been set. It was situated side of stage at stage level. Talk about things that make you go HMMM.

Daryl's voice was struggling to be heard over the stage sound of the band from the

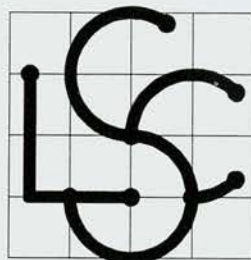
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central FOH position where I was sitting which left me hoping that Tina would not suffer the same fate.

Not So. The problem was only compounded. Two thirds into the show when everything was louder than everything else, the lead guitarist cranked up his quad box - which of course was pointing at his ankles - to a level that caused a finger to be inserted in each ear. Even hergoodself was starting to make noises, like Madge, from the Simpsons. Luckily, a lot of listening could be done with my eyes as the performers applied themselves well in the hot conditions. As it turned out the people who got the cheap seats had the best sound in the house as they were not in the firing line. the people who paid the most had a wedge either side on the front of stage which was inadequate.

The crowd response to the show was one of great appreciation and Tina said she would be back for more shows in the future. For the band, Townsville was good for them as three or four musicians made their way to the Criterion Hotel to play with the local musio's after the gig and managed to sample a few Aussie beers.

From Townsville the show proceeded to Cairns for an outdoor gig where the sound people applied themselves to bring comments such as crystal clear.

- Noel Anthony, Townsville.

Tina's voice 'soft'

Recently my mother saw Tina Turner in Brisbane Entertainment Centre, at the beginning of the show (we shall totally disregard Mr Braithwaite due to excessive boredom) Tina's voice was soft in comparison to the band and relatively unintelligible. This improved during the night, but on the whole the sound was sloppy and there was obvious changes in the mix at different times. Even though she is a 47 year old Social Worker she totally agrees with the editor of Connections.

-Phillippa Snitch Petersham, for Linda Snitch Dayboro Qld.

Not Jands Agents

RE: NOVEMBER 1993 ISSUE - PAGE 49
FACTORYSOUND ADVERTISEMENT

Factory Sound are not "agents" for either JBL, Shure, Jands or Rane as claimed in their advertisement.

We realize it is difficult to verify all ad copy submitted for publication however we would request that in future any claims relating to the distribution of the aforementioned products, or for that matter any other products distributed by Jands, be confirmed with this office.

Peter S. Grisard, Marketing and Engineering Director, JANDS ELECTRONICS Pty Ltd.

A shocker?

After reading Howard Jones' column in the last issue about "earthing in consoles" I was stirred to write in support of his findings and express my own concerns on the safety of powered mixers which are "double insulated".

Apart from the very unpleasant zaps received by performers when their lips etc contact mics there is another and much worse possible scenario.

That is, if an outboard effects unit or stage gear is linked to the powered mixer and that gear has wrong or faulty mains wiring the powered mixer and all mics connected to it can become live at full 240 volts AC!

No fuses will blow! Performers will receive massive shocks instead!

In my experience the main supplier of such powered mixers is Yamaha and if any reader owns or is using one I believe it should have a 3 core lead fitted as a matter of urgency.

While I understand that it is not illegal for Yamaha to supply this equipment I imagine that dead customers are not good for business, mine or theirs.

Finally, I wonder what the various mic suppliers think of their mics being used with non-earthed powered mixers re zapping and shock hazards?

Phil Allison, Electronics Technician, Summer Hill NSW.

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GUVT

Write in Reader Service number: 157

Lone Wolf Media Link update letter

Thank you for your continuing interest in Lone Wolf's MediaLink™ technology and its applications in the professional audio industry. Your readers like Doug Murphy (Footscray VIC) do deserve to know "what's happening" and we at Lone Wolf sincerely appreciate Connections' efforts to inform. Subsequent to Andrew Sargent's letter, printed in your August issue, we are pleased to advise the following.

Crown International is now officially a licensee of MediaLink™ and has joined the ranks of many other firms (like the Mark IV Pro Audio Group, Harman companies like JBL/UREI & Soundcraft... others like TOA, QSC, Carver, Rane, Z-Systems and more). This event was announced by Crown at the recent AES convention in New York City.

It is Lone Wolf's policy to not disclose licensee relationships or the activities (product plans, beta-test systems & sites, etc.) of its licensees. That is the prerogative of each individual firm.

To address Mr Murphy's interests as to "what is happening", the basic answer is that this is a good example of the application of an innovative technology to a free market economy with many different players, all of whom will apply their applications of Media Link™ to their own needs in different ways.

For example one firm, "Company X", may choose to become a licensee in private, proceed with research and development, and then present a new product to its marketplace in the future. Others may move more quickly.

For example, at about the same time Mr Murphy was penning this letter, Vega Wireless Systems was just beginning the R&D track that led to the development of a Medialinked RF microphone product. Within a few months, the resulting system was demonstrated and then awarded "Best New Sound Product" at the Lighting Dimension International show (LDI-93) held in Orlando, Florida in early November.

Through V NOS™, Lone Wolf's Visual Network Operating System software, this wireless-mic system is fully 'networkable' and compatible with other Media linked products from different manufacturers

There are also other new licensees that have not yet publicly announced their relationship, due to their relationship, due to their own particular product development cycles and engineering/marketing timelines for upcoming applications of this technology in their products.

We are currently in negotiation with additional firms in Australia, Europe, Japan and the United States. You will not hear about them from us first. Disclosure is not up to the licensee. The reason to license MediaLink™ technology is not to join some trendy band-

wagon, but as Andrew Sargent pointed out in his August letter, to increase the power and functionality (to both the system designer and the end user) of a manufacturer's products as networked systems become more common in the near future.

Lone Wolf's patent for its network communications protocol and hardware applications was granted on Sept. 14, 1993 (US Patent #5,245,604). Copies are now available through the US Patent Office. International filings and continuation filings are in progress.

Lone Wolf Corporation would like to again thank Connections for its interest in the ongoing unfoldment (*a new word!* -Ed) of MediaLink™ technology and its application currently being engineered by manufacturers in the pro audio industry.

-David Scheirman, Professional Audio Liaison, Lone Wolf Corporation, Redondo Beach, California (USA).

**All very nice, the big question is WHO will sell the V NOS software and Media Link Network Bridge here in Australia. The products will come on stream in 1994, all neat Media Link Ready. The software will want to be affordable too. This question and many more will be answered in Connections first! -Ed.*

Sexist Cover

The use of the female form to sell magazines in Newagencies can be counter productive. While your November cover was the best yet, it produced a negative reaction with my workmates. Stick to equipment.

-Shiela Yates, Glebe NSW.

**Nice to hear from you again, Darling xx -Ed*

SEND us your letter! Yup, we ALWAYS print the aggro ones. We will award a free subscription for the best letter each month. PO Box 439, Epping 2121 NSW Aust, or fax: (02) 876-5715.



CC's.

It's not about food.



NOT AT ALL.

PRODUCTS

COMPACT DIGITAL MIXER

Yamaha Music Australia announce the new generation DMP9 Series Digital Mixing Processors, compact 3U rack-mounting digital audio mixers in two versions: DMP9-16 and DMP9-8, 16 and 8 channels respectively. The DMP9 mixers provide high quality audio mixing and effects for a wide variety of applications in recording studios, broadcast, video post production and MIDI project studios.

All internal processing is performed in the digital domain, with Yamaha's latest digital signal processing (DSP) technology providing professional 16-bit A/D and 18-bit D/A conversion with a dynamic range in excess of 92dB. A 16-character 4-line LCD display and rotary data entry wheel provide easy access to all DMP9 functions, including the dual internal digital effects processors.

The DMP9 features 50 scene memories for storing all mix parameters. Scenes may be instantly recalled, either manually or via MIDI Program Change messages. All DMP9 functions may be externally controlled via MIDI.

Input channels may be used as mono inputs, stereo pairs, or a combination of both. Each input channel features; rear panel analogue line level input (channels 1 & 2 also have balanced XLR mic inputs); front panel

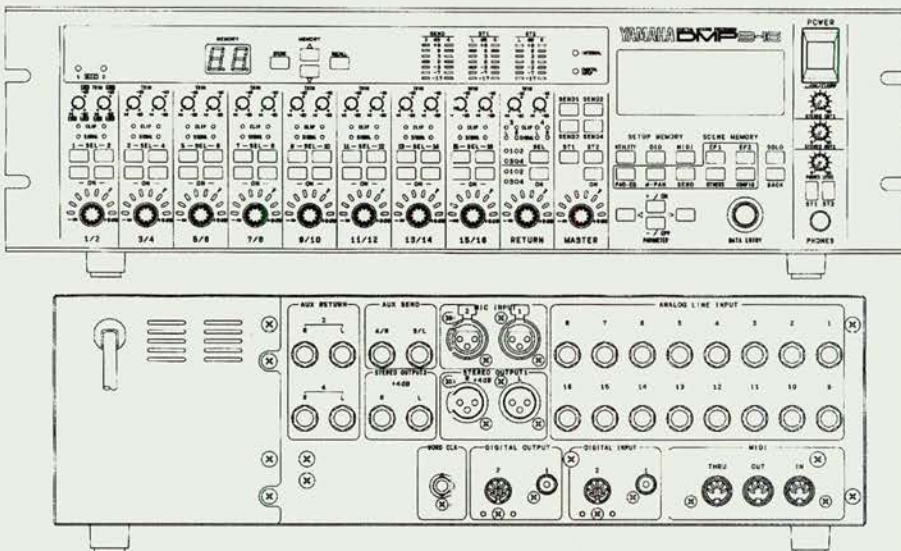
pad switch; 2-band sweep EQ; channel delay; phase; solo; peak level indicator; 4 auxiliary sends (sends 1 & 2 feed the internal digital effects processors, sends 3 & 4 are available as analogue line level outputs); and a rotary fader with 8-segment LED level indicators.

The DMP9 features two independent stereo outputs, both fed by separate busses. Stereo Output 1 (analogue XLR, digital CD/DAT 1EC958, EIAJ CP-1201) can feed a tape machine or main mixing console while Stereo Output 2 (analogue jack, 8-pin DIN Yamaha format), which follows solo, can be connected to a monitor system. Each stereo output features independent level controls with 7-segment LED bargraph metering.

One stereo digital signal in either CD/DAT or Yamaha format may be fed to a pair of input channels or straight to the stereo buss. Digital outputs can be fed from either stereo buss, pre or post fader. A BNC connector is provided for external wordclock synchronisation.

The DMP9 features two internal digital multi-effect processors, providing a wide range of effects including reverbs, delays and modulation effects.

For further information, please contact Yamaha Pro Digital Group, (03) 699-2388.



SELECON UPGRADE ACCENT

The Accent Profile and Accent Spot are now fitted with a bimetal thermal fuse, say Selecon. This replaces the non-resettable thermal used previously, this new "thermik" type is designed to reduce 'nuisance' tripping caused by poor quality dimmers and over voltage. The new fuse trips at 110 degrees C, and resets at 65°C. It complies with Australian Standard AS3108, say Selecon. Call them: 64-9-360-1718.



Quality selection



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Regards ...Norma Hancock

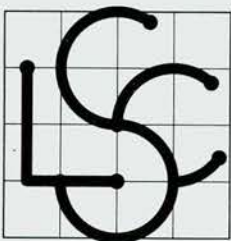


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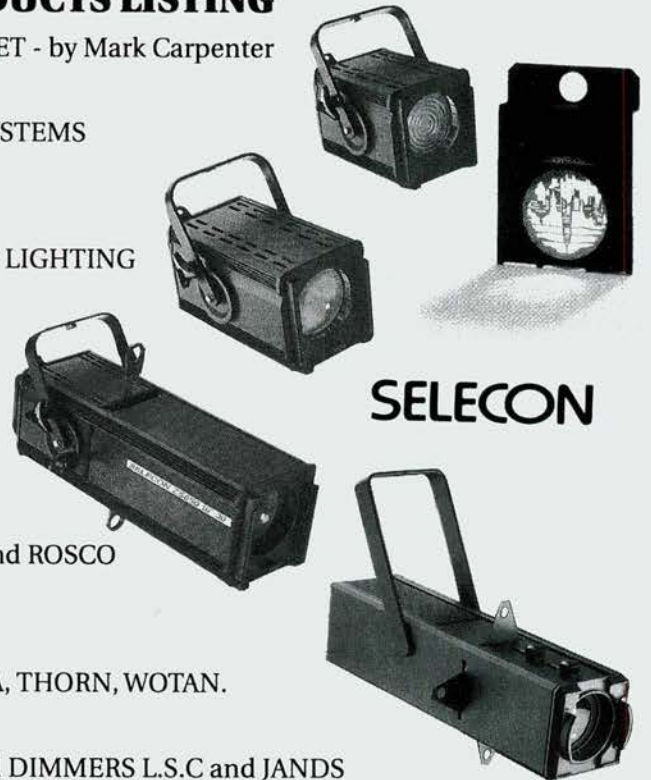


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- LIGHTING BARS
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- LENSES
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- PUSH UP THEATRE STANDS
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In ADELAIDE....

BSS Light & Sound Innovation in Adelaide, were recently contracted to provide a 10 minute lightshow synchronised to a musical sound track for Malaysia Airlines commercial launch. Eight Mini Ultrascan 200MSD fixtures were used along with a collection of other lighting FX including TAS Nova Rays, FAL Crocodiles, ET's and regular cans. A DF-50 diffusion fogger was employed for smoke creation and the whole operation was controlled by ShowCAD utilising SMPTE time code for automatic operation and accuracy. Corporate Productions are always a headache but the event was a great success. It's good to see automation moving into a market place that has always called for precision. BSS have also had a good run on the Dance Party scene with jobs ranging from the 400 to 3,500 people, using R4 speakers and adding Trackspots and Microscans to the previously mentioned equipment.

Revolver send the NO Mistakes Press Release!

Australia's premier rock act, The Angels will once again use a PA and lighting system supplied by Revolver Audio. For World AIDS day the band will play a special show for the inmates of the Cessnock jail on Wed. 1st December.

Early last month the Angels rocked over 2500 people at Selinas, on their latest tour, with a PA consisting of 12 Revolver sub cabinets, 12 Martin M212 mids, and 12 JBL horns in the main PA stacks. Delay stacks of Revolver bass cabinets and Revolver/Martin full range cabs along with full range cabinets for the VIP area complemented the main stacks. The whole system was driven by locally made SHOWCRAFT power amps.

Revolver has been providing PA systems for the Angels since 1977, when Lee Conlon built the band their first touring PA, complete with a separate monitor console to provide up to 4 sends!!

The Revolver combination of custom bass cabinets, Martin Midrange and SHOWCRAFT power amps once again proved a winner for South African reggae superstar Luck Dube, also at Selinas.

Recent Revolver clients include Boom Crash Opera., Billy Thorpe and The Aztecs, Died Pretty, The Saw Doctors, Weddings Parties Anything, and Daryl Braithwaite.

Revolver has also been providing trucking for Tommy Emmanuelle and Wendy Mathews said Hire Manager Greg Weaver.

Townsville Rains

Two days notice was all that was given for Wild Gravity to supply 80 cans for Yothu Yindi at Dean Park Sound Shell. We pre rigged the show till midnight the night before, and woke to pouring rain. It never rains in Townsville unless you are doing an outdoor concert. But by midday the sun was shining and rigging began. it was most refreshing to see the Yothu Yindi show - one of cultural dance and music, a theme flowed that we should all live in peace and harmony. There is no other act like them.

*SEND us your news, pictures and suchlike.
Fax: (02) 876-5715, Phone (02) 876-3530, PO
Box 439, Epping NSW 2121 Australia.*

We are also accepting fresh GREAT MISTAKES stories, so get cracking!

The DMX Commander Story

Osmond Electronics had hired some Intellabeams and Trackspots from TCP. It was all set up and working fine on the first day. Next day the crew came in, turned the rig on, only to find out there was no response from the fixtures. A panic phone call to Andrew from TCP sent him out to the site to fix the problem. Everyone suspected a crook lead, naturally, which was going to mean a huge session checking all the leads from desk to the lamps.

Andrew luckily happened to have a DMX Commander in his tool case. Everyone said, "What's that?". After a quick explanation, he plugged it into the 5pin DMX lead at the desk end and sent a signal down the line and to everyone's amazement, the waggly mirrors responded. Andrew's reply was, "I think your desk's stuffed mate!"

Result : Problem fixed in a flash!



BSS means Busy in SA

It was a Big Ticket lighting install at the Big Ticket Club in Hindley Street - with a fully integrated lighting system driven by ShowCAD control. The system includes:

- 6 TAS Mini UltraScan 200 MSD's,
- 1 TAS Synchro FX
- 2 TAS NOVA Ray FX,
- 1 Program Sistem Seltz FX
- 1 Program Sistem Reflex FX
- 1 Astroraggi copy (naughty clone-ers!)
- 1 Diffusion DF-50 fogger
- 7 Strobus 1 strobes
- 18 Pinspots
- 1 Nebula 3 phase dimmer
- 2 Nebula single phase dimmers
- 1 Roland PC-150 49 key MIDI keyboard.

ShowCAD runs everything, with the Roland keypad operating as a 49 way touch panel via the MIDI interface option on ShowCAD. This is a great option for a touch panel, say BSS, 'cause it retails for a humble \$350.

WOOMERA DSCW

Woomera is a former rocket base, still used for nefarious military purposes. BSS whacked

in a Distributed Music System with 72 wall mount 100v line speakers, with custom 5 input switching, and 6 Redford 250w 100v line amps. Inputs are Satellite TV, local and ABC radio, etc.

ST AUGUSTINES CHURCH (UNLEY)

... scored a complete sound reinforcement system (PA for short) with 2 Celestion SR-3 speakers, a custom column for the Sanctuary area, 3 Audio Technica AT 837 gooseneck mics, a Ross 16ch mixer and EQ, Ampower amp and 5 Chiayo radio mics.

According to BSS the room is the worst case of a reverberant room truly really ever, and the system now works wonders.

We notice the diplomatic spec that gives five major suppliers a bit of the action each! BSS can be called on (08) 352-8688.

Cowboys run in Melb

Lightmoves PES in Melbourne will push the Cowboys out of the Nightclub, Theatre and AV contracting game because they are now Licenced Electrical Contractors. An 'A' grade sparkie will do all installation work hence

forth. The Lightmoves PES people have likewise been somewhat occupied for the past few months with a swag of work, including:

*Full lighting, video, audio and CCT installation at Zagamies in Ivanhoe,

*Upgrade at Sovereign Hills with another 36 channels of dimming to total more than 300 channels of Dynalite, and more theatre luminaires to total more than 400. Another ZR20 fogger takes the fog machine count to 11 - christ what a huge installation!

*The Shirley Spectra of Sydney added more audio and computer and time too, they have been big time involved at Sovereign Hills.

* National Australia Bank has had an AMX control system with AV and lighting,

* Fixup the Video Wall at Channel 10 to run during Take 40 Australia,

* Video and audio for various Grace Bros/Myers stores,

* Decorative lighting for numerous gaming venues all over Victoria,

* 200 egg strobes for the spire of the Victorian Arts Centre for the Melbourne International Festival, and more.

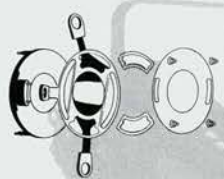
Call Braham Ciddor at Lightmoves PES and ask for some spare work on (03) 819-4566.



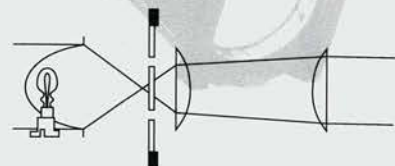
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SPC1200 - And what others have to say - leading British lighting designer and educator Francis Reid in a June issue of "The Stage"

"- applying the sort of lateral thinking that makes their latest PC spot the current world leader in beam quality."

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SELECON

Phone: 64 9 360-1718 Fax: 64 9 360-1719

Write in Reader Service number: 146

Avid Media Suite Goes On Line

Avid Technology and Innovative Sound & Media are proud to announce the release of Media Suite Pro version 2.0.

One of the most powerful and popular non-linear digital video editing systems, now includes the option of capturing and editing SP Betacam picture quality video.

The Avid Media Suite Pro is a complete professional, desktop video editing studio, specially suited to corporate, educational and government markets.

Operating on an Apple Quadra 950 computer, some features include; s-VHS/BVU picture quality; 4 tracks of 44.1kHz CD quality audio; vision mixing with dissolves and digital effects (DVE's), import graphics, animation, Photo CD and Quicktime files.

Material produced on the Media Suite Pro can be ported into desktop multimedia presentations via Apple's Quicktime.

The MSP system affords an ideal medium for editing video and animations for CD-ROM and CD-1 titles, and in the near future will enable recording and playback of full motion video onto compact disk.

The Avid Media Suite Pro linked with CD-R technology creates a powerful digital video

production system and is priced at less than a third the cost of an equivalent SP Betacam A/B roll video editing suite.

The Media Suite Pro dramatically cuts the cost of a professional video post production facility and is extremely easy to use.

The Media Suite Pro puts video editing back into the hands of the producer in a compact, affordable desktop system, according to Innovative Sound & Media Tech. Call them on (03) 416-9688.

◆ **Innovative Sound & Media Technologies** has opened a branch office in Brisbane Queensland. ISMT is the Apple Professional Multimedia reseller and the distributor of the Digidesign range of digital recording products like Pro Tools. ISMT also distribute the Avid Media Suite Pro, and FAST, Video Machine digital video editing system.

Robert Styles, ISMT Managing Director - "Our new Brisbane ISMT office, under the control of James Rogers, will enable us to offer a better level of local sales, service and support to our existing and all future customers". Contact James at 10 Evans Street, Bowen Hills, QLD 4006, phone/fax (07)252 1274

AVV takes Apocalypse

AAV Australia Pty Ltd, the Melbourne based television post-production and video duplication facility, has announced that as of 1 December, 1993 it will be the new owner of Apocalypse Melbourne and Sydney.

Apocalypse, formerly owned by Comcorp, operates post-production facilities in Melbourne and Sydney. It has been placed in the hands of their Receivers and Managers due to financial difficulties.

AVV Australia was first established in 1974 and has a long history in the electronic communications industry, especially in video post-production.

Ted Gregory, Chief executive of AVV, said that this expansion will bring financial stability to Apocalypse and strengthen client service capabilities.

"Apocalypse Post Sydney, under Peter Skillman's leadership, has built a solid reputation and there is no need to make and significant changes. In Melbourne, we are well aware of the high standing in the industry of the former division of Apocalypse and will be maintaining this team"



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Course Guide

Chris Green researched what was still available for 1994. There is not a lot ...

Have you missed out on a university or a TAFE placing for 1994?

It's not too late to enroll in some privately run courses that could give you a new career in the entertainment technology area...

If your interest lies in music technology, sound engineering, film or video production, there are plenty of courses on the market. Many of them run several times during the year, so even if you have missed out on a place in a university, a TAFE college or one of the prestigious art colleges, there are still many opportunities to develop your skills and obtain the basis for a career in one of the entertainment technology areas. If you are interested in theatre, lighting or set design, you'll probably need to await a 1995 place in one of "the big four" (NIDA in Sydney, West Australian Academy of Performing Arts in Perth, The Centre for Performing Arts in Adelaide, and the Victorian College of the Arts) or in one of the other notable schools such as Ballarat University College, Wollongong University's School of Creative Arts, Latrobe University, Box Hill College of Technical and Further Education, Queensland Institute of Technology, University of Southern Queensland, or the Charles Sturt University. Do keep in mind that some of these institutions - notably the Australian Film Television and Radio School and NIDA - run short courses through the year that are specifically designed for those already in the industry - these vary from year to year so contact them direct for specific course information.

The courses still available in the audio, film and video production field are many and vary considerably in length, cost, and in depth of coverage. Some are accredited by VETAB (Vocational Education Training Accreditation Board) which means that the course has been examined by a panel of industry specialists to ensure that it provides the training needed for that vocation. The important thing is to choose a course that caters to your own needs. There are courses angled toward those in full time employment by offering classes in the evenings or on weekends, as well as full-time courses that give you the qualifications needed in a shorter span of time. There are courses that cater especially to those with home recording studios; others that equip you to deal with state-of-the-art equipment. The cost of courses often relates to the length of the course, but also to the equipment provided. Bear in mind that equipment needs are generally high for such courses, so many courses are

quite expensive. It's up to you to decide if the investment in time and money will be justified by the benefits you'll receive.

We've listed below a large number of courses, state by state. Most do not have stringent entry requirements; we've listed the necessary qualifications whenever possible. Many will have places still available, even for February starting dates, but we suggest that you apply for your chosen course as soon as possible. These schools operate on a "first come, first served" quota basis: that is, once they have filled the course no more placements will be available. Contact individual centres for an application form and to confirm all details.

Please note the Publisher is particularly keen to point out that Connections doesn't endorse any course at this time, and that the courses herein should be fully investigated for suitability before handing over any money. In particular, large advance payments or lack of progress payments should be avoided.

ACT

NRS Training School

PO Box 68, Barker Centre ACT

Tel: (06) 295 0162

Fax: (06) 295 9448

Contact: Anicca Stefanou

Video & Television Production Certificate (full time or part time available): gives you an understanding of all aspects of basic television production including news, documentaries and drama.

Cost: Both full time and part time \$1,295

When: Full time course runs 8 times per year, first date is 31 January 31 1994. Part time course starts March 2 1994 and July 27 1994.

Duration: Full time - 4 weeks; part time 20 weeks

Film and Video Director/Producer Certificate Course: teaches the basic skills involved and will provide some hands-on experience of directing and producing.

Cost \$445

When: September 8 1994

Duration: 10 weeks

Sound Recording Certificate Course (full time or part time available): provides students with the technical and operational background required for multi-track recording and production of commercials, drama and music.

Cost: full time and part time \$1,295

When: Full time course runs seven times during the year, first date is February 28; part time runs February and July 25, 1994

Duration: full time 4 weeks, part time 20 weeks

Live Sound Production Certificate

Course (both full time and part time available): provides students with hands on training in the correct use of a mixing console, speaker equipment, microphone selection and placement.

Cost: \$445

When: Full time January 24, 1994, July 4, 1994, and October 3, 1994; part time March 1, 1994, June 7, 1994, and September 6, 1994

Duration: Full time 1 week; part time 10 weeks

NSW

Academy of Audio Engineers

396-398 Elizabeth Street, Surrey Hills, NSW 2010

Tel (02) 281 8899

Fax (02) 212 4801

Contact: Sharon Weizenegger

Certificate Course (both full-time and part-time available): structured with the beginner in mind and covers a range of subjects including theory of sound, MIDI, Live Sound production, PA systems, digital disc recordings, etc. Students use the 8-track, 16-track and 24-track recording studios. Accredited by VETAB (vocational education training accreditation board).

Cost: Full time: \$2900; part time: registration fee of \$500 plus a weekly tuition fee of \$75 - total cost \$3500 or \$3150 if paid in full in advance

When: (06) 295 0162
When: Full time starting dates February 14 1994, April 25, 1994, and June 27 1994 - 8 hours per day 4 days a week with a choice of 3 time slots between 8 AM and 8 PM. Part time starting dates February 14 and June 27: two 4 hour classes per week, with a choice of times.

Duration: Full-time 10 weeks; part-time 40 weeks.

Diploma Course: an advanced program available exclusively to graduates of the Certificate course. Conducted on a commercial 24-track recording studio and concentrates on production techniques, audio visual synchronisation, and MIDI implementation for TV and Film.

Cost: \$75 per week or \$1125 if paid in full in advance

When: May 9 1994, August 22 1994, December 5 1994.

Duration: 15 weeks

Intensive Course part-time: essentially the first 20 weeks of the Certificate course condensed; allows student to complete this course and then return to complete and achieve Certificate level.

Cost: Registration fee \$250 plus a weekly tuition fee of \$75, or \$1625 if paid in full in advance.

When: Two four hour classes per week, with a choice of times between 8 AM and 12 AM available.

Duration: 15 weeks

Australian Institute of Music

17 Foveaux Street, Central NSW 2010

Tel: (02) 212 2333

Fax: (02) 212 2520

Contact: Athalie Hodge

Certificate in Music (Audio/Digital Engineering) full-time: covers Management/Studio Management, Audio Engineering, Principles of Acoustics, Digital Analysis, Live Program and Production.

Cost \$ 4500 per Semester

When: February 28 1994 and July 25 1994 (applications accepted until February 4 and July 1 respectively but early applications advised as there are limited places).

Duration: Two semesters (one year)

Associate Diploma of Music (Management) full-time: covers Principles of Communication, Psychology of Music, International Commercial Practice, Publishing, Principles of Entertainment Law, Accounting, Tour Management, and includes an instrumental elective.

Cost: \$3500 per semester

When: February 28 1994 and July 25 1994 (applications accepted until February 4 and July 1 respectively but early applications advised as there are limited places).

Duration: Four semesters (two years)

Emerald City Studios

505 Pittwater Road Brookvale NSW 2100 or PO Box 704 Brookvale NSW 2100

Tel (02) 905 7144

Contact: John Zulaika

No course but John offers full time in-house training on a complete studio set-up capable of full 24-track music production for records, TV commercials, soundtracks, MIDI production, stereo sampling & digital processing.

The KvB College of Visual Communications

177-199 Pacific Highway, North Sydney, NSW 2060

Tel (02) 922 4278

Fax (02) 922 7862

Contact: Karl H. von Busse

TV Production Advanced Certificate (both full and part time available): gives students specific skills in all areas of video production, editing, camera techniques, and sound production as well as a comprehensive picture of the industry.

Cost: Full time \$9,898; part time first year \$3,998 second year \$4,398

When: February 21 1994, evening classes for part time

Duration: Full time - one year; part time - two years

Video and TV Production Certificate: a shorter course including basic scripting, crew roles, directing, editing, lighting, camera techniques, industry overview and single camera productions.

Cost: \$ 3,998

When: February 21 1994 class times Monday and Wednesday evenings

Duration 1 year part time

Metro TV

Paddington Town Hall Cnr Oatley Road & Oxford Street or PO Box 299 Paddington, NSW 2021
Tel (02) 361 5318
Fax (02) 361 5320
Contact: Vicki Sowry

All courses are run in conjunction with the Australian Film, Television and Radio School. Metro TV also runs a number of other day and evening courses in video production, editing, scriptwriting, production management, creative video production, and new technologies. Please contact Metro TV for updated information which was not available before we went to press.

Music Futures

PO Box 251, Vaucluse NSW 2030
Tel (02) 388 7222
Fax (02) 337 4365

Contact: Derek Williams

Certificate of Music Technology: a course designed principally for people with a home recording studio; includes composing, arranging, MIDI, SMPTE, sampling, sound engineering, multi-track sequencing for small studios. Limit of seven per intake.

Cost: \$180

When: Next intake January 1994, run in six/seven week intervals after that. Two to three hours per week, available evenings or weekends.

Duration: 6 weeks

Roland / ATRS Music Production

Course

38 Campbell Street, Dee Why NSW 2099.

Tel (02) 982-8266

Fax (02) 981-1875

Contact: Andrew Scott

Stage One: covers the theory of sound, how we hear and the nature of musical instruments, design and application of microphones and mixing consoles, all aspects of the music production process.

Stage Two: Computer based music and MIDI applications, comprehension of instructional documentation and more. Cost: \$2100

When: A 21 week course, starting mid February, with a lecture one evening and a workshop session scheduled throughout the week or weekend. Course is split into two stages of 10 and 11 weeks.

Cost: \$2100 (1993) - may change.

SAE (School of Audio Engineering)

There are five Australian locations of Sae- we list below the two courses run by each centre. The Audio Engineer Diploma is offered at each location; however, only Sydney and Melbourne offer it as a full time option. Additional courses/seminars run by individual centres are listed beneath under each state. Please note that fees differ for each location. Duration of courses and dates are approximately the same for each location.

Audio Engineer Diploma (AED): A full time course is offered in Sydney and

Melbourne only; all locations offer the part time course. An intensive training program giving students a solid grounding in all aspects of studio and audio work; includes both theory and practical studio demonstrations.

Cost: Full time - Sydney \$6800 (5% discount if paid in full in advance) Melbourne \$ 250 enrolment plus \$1900 per quarter in advance (x3 = \$5400); part time - Sydney \$6110 (10% discount if paid in full in advance); Melbourne \$250 enrolment plus \$300 per month; Brisbane \$ 200 enrolment plus 300 per month; Adelaide \$200 enrolment plus \$280 per month; Perth \$250 enrolment plus \$240 per month (5% discount if paid in full in advance)

When: Full time (Sydney and Melbourne only) March 22, 1994 and (Sydney only) September 20 1994. Part-time Feb 21/22, 1994 and August 22/24, 1994.

Duration Full time- 9 months. Part-time - 18 months

Home Studio Sound Certificate: (in Brisbane this is called the Certificate course, and in Perth the Certificate of Sound Engineering) designed for home studio owners, audio sales personnel, and people interested in music technology. Can be attended on a modular basis; you can choose to attend one or more modules, with a new module commencing each month. Each covers a different topic, such as Acoustic Theory, MIDI & Sampling, Mixdown Techniques, Setting up a

Home Studio, etc.

Cost: Sydney \$280 enrolment fee plus \$200 per module (payable 6 times (discount of 10% if paid in full in advance); Melbourne \$160 enrolment plus \$180 per month; Brisbane \$150 enrolment plus \$35 per week; Adelaide \$150 enrolment plus \$180 per month; Perth \$160 enrolment plus \$45 per week

When: Intakes usually in March, August and November; call individual locations for specific dates as they are variable and sometimes not decided until close to starting dates

Duration: 6 months if you take all six modules

NSW location:

68-72 Wentworth Avenue, Surrey Hills NSW 2010

Tel: (02) 211 3711

Fax (02) 211 3308

Tonmeister Producer Program (TPP)

part-time: an advanced course enabling graduates to record and produce classical music, arrange music and work in any studio/live situation. The course also will further their knowledge in producing popular music. Applicants must have an SAE Diploma (distinction) and be eligible for university entrance. The first three months of the course may be taken as a shorter option to gain the Advanced Studio Production Diploma (Distinction). Full course also offered in London.

Cost: Sydney \$6110 (10% discount if

(continued over)



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paid in full in advance) When: November 1995 (intakes only every two years)
Duration: 12 months

Western Sydney Audio Academy (in conjunction with R&R Recordings)

Unit 4/3 Anvil Road, Seven Hills, NSW 2147

Tel: (02) 624 4484

Fax: (02) 838 8964

Contact: Robert Zimola

Certificate in Multitrack Music Recording: starts with the basic elements of sound and gives students an in-depth knowledge of sound production, with an emphasis on engineering skills, studio, live sound reinforcement, editing, recording and mixing. No prior knowledge is required.

Cost: A registration fee of \$345 plus a \$65 tuition fee which is paid weekly.
When: February 1 to August 31 1994; Monday/Tuesday 6:30 to 10:30 PM
Also May 5 to December 2 1994; Wednesday/Thursday 6:30 to 10:30 PM

Duration: Approximately 7 months

QUEENSLAND

Academy of Film-Video Production
32 Little Edward Street, Spring Hill
Brisbane 4004 or PO Box 611 Spring Hill QLD 4004

Tel: (07) 831 5193

Fax: (07) 831 6199

Contact: Brian Benson

Film-Video Production Course: offers extensive training in the theory and

techniques of all aspects of film and video production; practically oriented with a wide range of professional equipment available for students' use.
Cost: \$90 materials fee plus \$2240-payable in 8 half-term installments
When: February 1994; one three hour evening or Saturday morning class per week
Duration: 40 weeks

SAE (School of Audio Engineering)

See main entry under NSW

22 Heussler Terrace, Milton, QLD 4064

Tel (07) 369 8108

Fax (07) 367 0143

Live Sound Certificate - very similar to Home Studio Sound Certificate but with more live sound content.

Cost \$125 enrollment plus \$35 per week

When: next enrollment probably April

Duration: 25 weeks

SOUTH AUSTRALIA

SAE (School of Audio Engineering)

See main entry under NSW

18-20 Deeds Road, Camden Park SA 5038

Tel (08) 376 0991

Fax (08) 376 1867

VICTORIA

Abbey Sound

23 Hartnett Drive

Seaford, VIC 3198

Tel: (03) 786 4211

Fax: (03) 786 4710

Contact: Ross Nicol

Live Mixing Course: a practice-oriented course structured to train newcomers and semi-experienced persons to operate a Single 3-Way P.A. system for a live venue.
Cost \$400

When: About 5 or 6 courses run per year; next starting date early February, classes on Wednesdays from 6-9PM, with last two classes 6 hours long

Duration: 8 weeks

Audio Visual College

1-3 Gordon St

Richmond, VIC 3121

PO Box 4215 Richmond Vic 3121

Tel: (03) 428 8812

Fax: (03)427 7079

Contact: Christopher Butler

Open Day: January 29th, 1994: enrollments possible then.

Audio Diploma: a broad based practical course in sound and music production, including subjects from Basic Sound Principles to Production and Mastering and covering areas involving audio post production, location recording and synchronisation for film and video. Suitable for those with no previous experience.

Cost: \$260 per month (with discounts available if you pay for the entire course or six months in advance)

When: February and August intakes each year; with a choice of either 11

AM or 6 PM class times, and theory lectures on Mondays for February influx and Tuesday for August influx.

Live Sound and Lighting Certificate Course: a practically oriented course suitable for students with no previous experience, designed for those wishing to become involved in professional level sound system operation and mixing.

Cost: \$400

When: one 3-hour class per week at either 2PM or 6PM

Duration: 12 weeks

Visual Diploma: designed to develop the potential of creatively motivated students toward the professional fields of Video and Film production.
Cost \$ \$260 per month (with discounts available if you pay for the entire course or six months in advance)

When: February and August intakes each year; with a choice of either 2 PM or 6 PM class times, and theory lectures on Thursdays for February influx and Wednesdays for August influx

Duration: Duration: 45 weeks

Australian Audio College

763 High Street, Preston, Melbourne VIC 3072

Tel (03) 478 2153

Contact: Rod James-Hume

Audio Engineering Diploma Course: prepares students for a number of careers in the audio industry, and starts with the fundamentals of sound



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recording and progresses to product manufacture and digital audio.
 Cost: \$75 enrolment fee plus \$2,000.
 Concessions available to current full time students or to the registered unemployed.
 When: February 28, 1994; both day and evening classes are available to comprise 1 theory class per week plus 300 hours of individual practice time.
 Duration: 50 weeks

C'est Ca Audio-Visual Services
 Rear 242 Smith Street Collingwood Vic 3066 or PO Box 319 Fitzroy VIC 3065
 Tel (03) 419 1506
 Contact: Norman James
 Intensive full-time hands-on course for only one student at a time gives an introduction to audio production and work experience; assistance given in placing students in employment after course.
 Cost: \$2000
 When: Dates are flexible; February intake possible.
 Duration: Two months

Open Channel Co-operative Ltd
 13 Victoria Street, Fitzroy VIC 3065
 Tel (03) 419 5111
 Fax (03) 419 1404
 Contact: Helen Bowman
Certificate of Video Production: (both full and part time available) takes participants through the production process to develop all the skills and knowledge required to be able to compe-

tently produce programs using a single camera.
 Cost: \$3,300
 When: Full time May 2- July 29 1994; day classes; part time April 11- December 7, 1994, Monday/Wednesday evening classes
 Duration: Full time 13 weeks; part time 9 months
Video One: provides an introduction to video equipment and to video production
 Cost \$ 250 or \$225 to members
 When: 14 courses in 1994, enquire with Open Channel
 Duration: 1 evening, 2 full days
Video Two: builds on basic technical skills and provides a detailed understanding of the complete production process.
 Cost: \$640 or \$576 to members
 When: February 10-April 28; May 19-August 4, June 28- September 13; September 8- November 24 1994
 Duration: 12 evenings, 1 day & group project
Video Three: provides participants with theoretical knowledge and practical skills in using a single hi-band video camera.
 Cost: \$ 430 or \$387 to members
 When: June 3,4,5,11,12,12; September 30, Oct,1,2,8,9 1994
 Duration: 1 evening, 4 full days
Video Editing: an introduction to theory and practice of video editing.
 Cost: \$ 385 or \$347 to members
 When: \$ May 14,21,28 & June 4; September 17,24 & October 1,8

Duration : 4 full days
Creative Editing: covers practice and aesthetics of editing
 Cost: \$480 and \$432
 When: details to be announced
 Duration: 8 evenings plus individual practical exercise
Production Management: a practical short course covering all the essentials of production management.
 Cost \$290 or \$261 to members
 When: July 28 & August 4,6,11,18
 Duration: 5 evenings
Sound for Video: a practical sound course covering theory, microphone types and their uses.
 Cost: \$ 280 or \$252 to members
 When: September 9,10,11
 Duration: 1 evening, 2 full days
Camera and Lighting: intensive, practical workshop focusing on the principles of camera operation, framing, camera movement and lighting.
 Cost: \$ 320 or \$288 to members
 When: October 14,15,16
 Duration: 1 evening, 2 full days
Introduction to Film Production: offers theory and practice of 16 mm film equipment and the production process. The course includes a production weekend.
 Cost: \$590 or \$531 to members
 When: June 7, 14, 21, 28, July 5,12,16,17,19,26 1994
 Duration: 8 evenings plus 1 production weekend
Introduction to Film Editing: a 'nuts and bolts' course in editing 16 mm film; covering such essentials as the

equipment, handling and care of film, syncing, edge numbers, logging the rushes, and neg-matching.
 Cost: \$ 380 or \$342 to members
 When: October 16,18,20,23,30
 Duration: 3 full days, 2 evenings
SAE (School of Audio Engineering)
 See main entry under NSW
 2nd Floor, 14-16 Fitzroy Street, St. Kilda, VIC 3182
 Tel: (03) 534 4403
 Fax: (03) 525 3542

Sound Serious
 PO Box 210 Belgrave VIC 3160
 Tel (03) 754 5122
 Fax (03) 754 8101
 Contact: Ken Pell
Basic audio course with an emphasis on live applications; suitable for both those in the industry and beginners.
 Cost: \$75 per class
 When: February/April/June/August/October (approximately- inquire to obtain date of next intake). Classes are eight hours long, and held on every second Saturday.
 Duration: 16 weeks

WEST AUSTRALIA
SAE (School of Audio Engineering)
 See main entry under NSW
 42 Wickham Street, East Perth, WA 6000
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The Idiot's Basic LIGHTING Course

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The Idiot's guide to basic stage lighting crunches into Part Four this month.....

Part Three.

WHAT we already KNOW, from Idiot # 1:

Electricity: 240v, 120v and the Par 64, Series Splitting, two Par 64 = 1 x 240v circuit. Complicated isn't it??!

Idiot # 2: Rigging, hanging and staying alive, with tales about Near Death Experiences...and Near Life ones too!

Idiot # 3:.....(might become a book!)

Working to a budget, sucking up to your employer, ancient effects lighting apparatus and outmoded work practices!

I've been loading in at the Madonna concert in Sydney, where a new moving light -the ICON- has been used for the first time. This represents the leading edge of lighting. Unfortunately my contract with Connections calls upon me to write about the blunt edge - for beginners!

Last month I revealed exclusively that the King Of Rock, J.O.K., wasn't a bad bloke - and told how I learnt a lot from doing a lighting job for Him. We talked about attitude, budget and being flexible. One good quote regarding attitude was contained in an ancient Channels profile of that revered lighting designer, Roger Barratt that I re-read recently. He said: "Light it for what it is". I like this kind of cliché, even if it's a little enigmatic!

One little thought I'll throw in now is in regards to Colour.

So this month it's into the truck. Yup, I might have suggested a good start to your new career was to light fashion or charity shows for free, but the all time truly best starting position for the aspiring lighting person is loading. If you are slighter of build and unsure you are up to this, think again. Many women reject loading outright due to some tribal chromosomes that shriek 'eek! I can't do that!!!!' To these quitters, and to the rest of

you, I hereby direct you into the back of the pantech for an important lesson.

RULE 1. Rally the troops.

You'll never be forced to load a lot of things alone, if it is a large show and you have somehow gotten onto the crew, there will be many other experienced people with you. Some of these experienced looking people may, however, not be quite so experienced. Hang back a little and watch WHO is lifting HOW. Team up with those who don't rush unnecessarily, and who look like they are pacing themselves for safety and efficiency.

RULE 2. Know the weight.

Lifting heavy roadcases from their wheels to get them into carry mode for a flight of stairs requires some knowledge of their weight first. Generally if it's an amplifier rack, the

bigger it is the worse the weight. Jands have some monsters that contain four 30kg amplifiers in each, for a packaged weight in excess of 140kg - this is a four person lift, for experienced types only. Today the normal rack is more likely to weigh 100kg all up.

Effects racks are no where near as heavy, but hey - you're a lighting person, right? Unloading sound is part of the gig, sorry to say. Speaker cabinets are as heavy as they look, so no surprises here, but the king case award goes to the 'packers', those square leads cases. These are high density, heavy, and nearly always built to a reasonable size. If you think a Bar Case is for cables, you'll find the bottom ripped out of it - that is, if anyone could load it into the truck in the first place. It'll hold a quarter of a tonne of cable!

Bar cases are low in weight to volume terms.

RULE 3. Do not bend the back.

When you lift ANYTHING you use your legs to raise yourself erect from down low. Bend legs, not backs. Lift from each side, don't get on the front of a lift so as you are walking backwards. Just watch and learn, you can't READ about lifting things, it's both boring and ... boring.

TRUCK ORDER.

Loading a truck is an art form. Truly. Start with the BIGGEST things first, usually the speaker boxes BUT not large, lightweight things like Bar Cases. You need to distribute weight forward if it's a rigid truck, a semi is less critical, you need even load distribution side to side in every case.

Stack speakers first, amp racks 2nd, on top of these is room for trussing and cubic things like band gear, wedges and purloined pub furniture. Then do the Bar Cases, leads cases and dimmers. Look to keeping weight low, a heavy case stacked atop the load is a big no-no.

Really, whoever is driving the truck should be in, or near the back door, to keep an eye on the loading. I saw a truck loaded after a Bette Midler concert at the State Theatre years ago, where all the chain motor cases went down one side with bar cases down the other. That truck got as far as Liverpool where the driver decided to go no further due to the perilous lean. Someone needs to think about weight distribution, it may as well be you, otherwise you may have to unload and RELOAD this damn truck!

MORE NEXT MONTH.

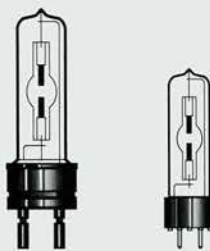
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WHO'S GOT THE POWER?

The recording process consists of three important stages; recording, mixing and mastering.

In a recent interview, a mastering engineer was claiming to be able to add air to music, to control the sound spectrum, to be selective about dynamic range, and to "bring it all back into focus". And maybe walk on water as well.

In reality, the total recording can be divided up as follows: writing, performing, arranging and recording account for about 60%, mixing 30%, and mastering 10%.

As a result, a great song and performance will overcome indifferent mixing and poor mastering, but a brilliant mastering job will not revive rubbish.

Mastering can only modify what already exists; there are some common problems which are difficult to deal with and should be eliminated earlier in the process.

SIBILANCE

This is the "ssss" sound in vocals or speech and consists of high energy, high frequency harmonics. Sibillance is not an issue for CD's played on audiophile systems but is a serious problem for cassettes, radio, cheap speakers

and vinyl. (Does anyone remember vinyl?)

Sibillance originates with poor vocal technique, is compounded by poor microphone technique or microphone selection and accentuated by ill-advised equalisation.

In the mastering studio, the offending track can be "de-essed", but this is not always successful as the entire mix is processed and other sounds such as cymbals, high-hats etc. will be affected as well. The best solution is to control sibillance before or during the mixdown session. Every professional studio should have at least one "de-esser".

MONO COMPATIBILITY

In a stereo world, there are still many instances of mono reproduction systems such as television sets, radios, portables etc, so it is important to check whether the mix will still sound acceptable in mono. In some cases, sounds will drop dramatically in level or even disappear. This is commonly caused by phase differences between the left and right channels which cancel each other when summed together in mono.

A good example of this is the "Queensland kick & snare", which consists of a mono sig-

nal fed into a budget effects processor. The resulting output is panned hard left and hard right. This sounds enormous in stereo and as a bonus when the mix is played in mono, the drums disappear - like magic! (*GREAT! -Ed*)

When a mix has phase problems the mastering engineer can either "mono-ise" the bass frequencies or reduce the stereo spread but both will change the sound of the mix.

DYNAMIC RANGE AND EQUALISATION

Mastering studios have signal processors such as compressor/limiters, expanders, and comprehensive equalisation but it is important to remember that these affect the entire mix. Effects devices cannot isolate individual sounds in the mix very well and so other sounds may also be affected. This restricts the amount of processing that can be applied at the mastering stage. For example, equalising the bass guitar may also affect the kick drum and compressing a vocal may modulate a keyboard. Severe problems are best dealt with at the mixdown stage.

NOISE

Removing noises such as hum, tape hiss, crackle and clicks from mixed tracks requires sophisticated processing, and the results are not always entirely satisfactory as there are often side effects. These sorts of problems should be eliminated as early as possible, preferably at the multitrack stage. Every professional studio should have at least one noise gate.

THE VICTORIAN OFFICIAL SECRETS ACT

Although this is not a sound quality problem it can cause difficulties. Mexicans constantly avoid supplying any tape information other than the name of the band. In the case

(continued over)

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MASTERING (continued)

of DATS, usually there are no track IDs, and if there are, they are not numbered. A lot of time is spent looking for the relevant tracks and occasionally mistakes do happen. Even a spacecadet can press ID and RENUMBER buttons. Never assume that someone else will fix it.

BLIND FAITH DEPT.

A quarter-inch analogue tape arrived recently for mastering (in the obligatory unmarked box), and when played on the two track machine, sounded quite strange. Playing a hunch, a quarter-inch 8 track machine was located and yup, the tape was a multitrack master. What confidence! Resisting the temptation to do a hot remix, the client was phoned and yes, there was a mix available, on cassette.

ARRGH!

SEND PAUL QUESTIONS: Fax (02) 876-5715.

PAUL BRYANT is a Mastering Engineer at All Music Manufacturing, call (02) 557-1169.



The Laws Of Electronics

Successful repair work is probably more often characterised by patient, persistent effort than by sudden bursts of insight. And a working knowledge of Murphy's Law is every bit as important as that of Ohm's Law! A couple of this month's repairs illustrate the point very well.

The first involved a service call on a mixing console installed in an outside broadcast van. The console in question was a small Sony, quite easily removed and sent to the workshop. The operator, however, was adamant that he wanted the desk serviced on site, so I packed up the Rolls and off I went.

When I arrived, the problem was quite audible - the Auxiliary 1 buss output was producing a horrible white noise type sound. Turning up the individual channel Aux sends didn't alter the sound, and ridding the Aux 1 main

fader caused the sound to go up and down in level - so it was immediately apparent that the fault had to be in the summing amp circuitry for the Aux 1 buss.

Referring to Fig 1, it can be seen that the two Aux output summing circuits are identical, and very simple. The signals from the individual channel Aux 1 sends arrive at pin 9 and are summed by one half of IC303. The

other half of IC303 is configured as a unity gain buffer driving the main Aux 1 fader. Stoking up the oscilloscope and having a look around showed that the output at pin 1 was jammed hard at the positive rail voltage, with a spiky AC noise voltage superimposed on top. No surprises here - the op amp had failed and had to be replaced. Murphy's Law had to be obeyed first, however.

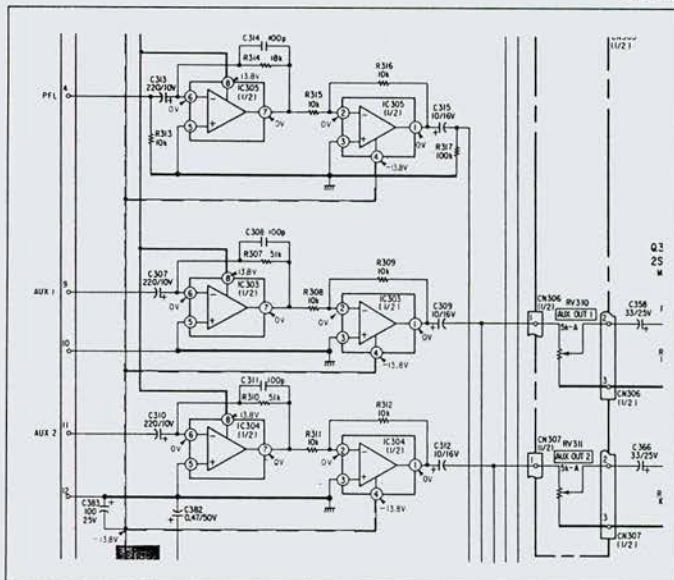
Searching through the kit of spares which I had brought with me - which contains nearly every op amp known to modern electronics - revealed that I didn't have an RC4560D - the op amp used as IC303. There was nothing for it but to whip over to Sony and grab the part.

Arriving back at the OB van, the newly obtained part was duly installed. The Aux 1 buss was now quiet - no horrible white noise. Checking with the CRO showed that IC303 pin 1 was now sitting at 0v and all other circuit conditions looked normal. Fine - the cover was bolted back on to the console, the console reinserted in its cutout and all the leads plugged back in. But hang on - what was this horrible white noise sound coming out of the Aux 1 buss? True, it didn't quite sound the same as before, but it wasn't meant to be there.

Naturally, the desk was removed again and IC303 revisited. Putting the CRO probe on pin 1 showed a slow oscillation in DC level, from ground to full rail voltage. This condition could only be caused by C309 being faulty - this capacitor, a 10 uF electrolytic, was apparently leaky and disturbing the DC condi-

(continued over)

FIG 1



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Chris Deamond - Visual Music Studio City, CA

"We chose the Orion console after going out and doing some very careful shopping around. It's very quiet. You can crank up the masters and control room volume as high as it goes and you don't hear residual electronic noise. I'm used to working on a Neve 8128 series and the Orion's functionality is very similar, yet it fit well within our budget, allowing us enough money for our other start up costs. I'm really happy with the console, it sounds great - really great."

Tim Jaquette - A to Z Studios & Bazzbo Productions - La Verne, CA

"When we looked for a new console that was reasonably priced and extremely quiet (because of our digital formats; NED PostPro's and Sony 3324's), the Orion fit the bill and was still flexible enough to keep up with our demanding production style."

Hal Beckett - Beckett Productions Vancouver, BC

"The Marilon's routing is extremely flexible and it is very wide and open sounding. Just what we need for the type of large orchestral scoring sessions that we do."

Linda Coltrin - Studio 1 Salt Lake City, UT

"I just purchased the D&R Vision. It's wonderful! It's my third D&R mixing console. Michael Pinder, formerly of The Moody Blues.

"With the introduction of our new 20-bit digital recording and editing system, ProMaster 20, we knew that we would need to incorporate an extremely quiet and transparent sounding console. The D&R Orion fit our needs perfectly."


Peter Gotcher - Digidesign CEO Menio Park, CA

"I like working on the D&R Triton. No matter where I go with the tracks after we're done they always sound great. I usually like to mix on a Neve V series, but lately the mixes that we have done on the D&R sound really great. The Triton has a wide open sound and it really delivers the warmth that I need. I tend to shy away from the digital hypey sounds that many film and TV composers are using today. The D&R really helps me get what I need."

Phil Marshall - Phil Marshall Music Los Angeles, CA

Hear the light.

On October 1, 1992 at AES/San Francisco, QSC invited the industry to "Hear the light."

It was time to unveil a breakthrough that QSC was convinced could become the long-awaited standard for pro-sound computer control and network integration —  Lone Wolf's MediaLink™ and the Visual Network Operating System (VNOSt™).

MediaLink offers complete, non-proprietary, open system interconnection with any audio device via a common networking language (VNOSt) and simple hardware interface.



The QBridge™ is the hardware interface for various communication formats in a MediaLink network and the QHub™ connects up to eight full-duplex fiber optic devices.

QSC was the first power amp manufacturer to recognize MediaLink's potential and develop QSCControl™ (pronounced "Q's Control").

QSCControl connects QSC EX Series Amplifiers to the MediaLink network. It gives you total computer control and monitoring of all amplifiers and any other MediaLink device in your system. (Even non-MediaLink devices may be bridged to the network.)

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You can customize control panels, view and change network configurations (LanScapes™), and design an endless variety of venue applications with Virtual Venue™. All graphically. All with mouse-driven, drag-and-drop simplicity and efficiency. And, you can instantly switch between views in multiple open windows.

In other words, QSCControl takes complete advantage of the full-function power and ease-of-use of the two most popular GUI's. Versions are available for both Macintosh® and Windows®. In fact, with MediaLink your network can include both of these platforms at the same time.



The QSCControl software is available in Macintosh and Windows versions.

One of the most revolutionary features of a MediaLink/QSCControl network is its use of Fiber Optic Cable for connection between devices. Fiber Optic Cable is immune to interference

and it prevents ground loops. It offers a very high bandwidth. And, this Fiber Optic Network will allow you to upgrade to digital audio or whatever else the future may bring.

Speaking of the future, what about MediaLink's potential to become the industry's widely accepted standard?

It may still be too early to tell, but the list of leading manufacturers who have "heard the light" is growing rapidly. At the time this ad was produced the list



With QSCControl and MediaLink, your network may include both "Mac" and PC systems.

included JBL, Soundcraft, UREI, Rane, TOA, Carver, Altec Lansing, Vega and Klark-Teknik. But, if you want to keep up to speed, you'd better contact us. It's likely the list will keep getting longer.

If you're considering computer control, don't get locked in to a closed network. Join the MediaLink revolution.

Call for more information

ARTECH SYSTEMS AUSTRALIA

WORKBENCH (continued)

tions at the output of the op amp. Those of you who read electronic journals will know that this type of capacitor is viewed with great disfavour - this being an example of the kind of trouble which they can all too easily cause.

Well, this time I did have a suitable replacement for C309 on hand and the fault was finally put to rest. However, I do wonder in these situations how long it will be before yet another electrolytic cap starts to fail? This Sony was about 8 years old and in my experience capacitors of this age can well and truly be on the way out, so it will be interesting to see if any more service calls arise on this console. I'll keep you posted.

Another job illustrating the slow, painstaking nature of some repair work involved a small, portable DAT recorder which came in to the workshop with a very interesting fault - it wouldn't 'wake up'. Even with a fully charged battery, and a known good power supply, this machine wouldn't power up when the ON switch was pressed.

Now, the on/off switch on these portable DATs is never a simple light switch type arrangement - i.e. push the power-on button and a voltage is connected to the circuits. Portables have a sleep mode and an awake mode, and even in the asleep mode some of the DAT circuitry is still active. Typically, a microprocessor is dedicated to monitoring and controlling the front panel functions and though the DAT may be in a powered-down condition, a voltage is still supplied to this microprocessor. It continually scans the control panel, watching for a button press. When it detects that the power-on button has been activated, it then issues commands to 'wake up' the rest of the circuits. You know that your machine has woken up because an indicator lights or the display panel shows some signs of life.

Studying the circuits for this particular machine showed clearly enough that a relay was used to switch on various circuits as the DAT 'woke up'. This relay in turn was controlled by a front panel microprocessor as described above. Activating the power-on switch didn't give the characteristic sound of relay contacts

switching over, and I decided that I needed to check various signals on the small daughter board containing this relay. So far, so good: the signals could be checked at the pins where this sub board was soldered into the main PCB. The commands arriving at the relay from the micro were all in order, but the response from the relay circuitry was incorrect. Furthermore, I was troubled by a reminiscent odour - a kind of electronic burnt-offering smell. I definitely needed to check the daughter board more closely.

Now, this was where the really hard work began. Firstly, although the manual went into quite a bit of detail on how to remove some of the other boards in the machine, it had nothing to say about this particular PCB. Secondly, this board was one of three daughter boards soldered on to the main PCB at right angles, and well buried under the metalwork forming part of the front panel chassis. Needless to say, the board I wished to get at was the middle of the three boards and the least accessible from the front or rear. Murphy again! Grrrr.

Despite the apparent intention of the manufacturer that this board would never need to be removed or worked on, it was going to have to come out. There was nothing for it but to dismantle this machine into more pieces than I've ever had a DAT before. And finally, all this persistence was rewarded. When the relay board was extracted the fault was immediately obvious, as several components had fried, with little volcanic eruptions from within splitting them in half. Sadly, the damage extended to the PCB itself, as tracks had lifted and burnt away altogether.

This machine is now sitting on the shelf, waiting for the replacement parts to arrive. Fitting them will be a whole new adventure because they are all surface mount devices and will be difficult to attach where the PCB tracks have lifted. And then, of course, there will be the challenge of reassembling the machine and remembering where all the pieces belong. Murphy's Law, of course, predicts that at least one screw will be left over!

**Howard Jones runs Studio Solutions in Sydney, who sell, repair, hire and install. Call him on (02) 906-4363 or fax: (02) 439-6444.*

STUDIOS

EX-TRACK

With Studio Editor, Greg Simmons

Paradise Studios have finished upgrading their Harrison console and reckon it sounds excellent. The upgrade includes replacing all the amp chips with the latest state of the art chips, replacing all FET switches with self-cleaning relays, replacing all the VCA faders with passive P&G faders, and replacing all the pan pots. The total number of amp chips in the master section's signal path was reduced from 30 old chips to five new chips, and the whole thing is transformerless. Platinum's owner, Bill Field, says he's got unsolicited letters from many of Australia's top engineers saying it's better than anything in any other studio in Australia. "Basically, we've had some of the best engineers in Australia using our desk, and they're all trying to get back in!". The studio is heavily booked at the moment, with 'Woody' Annisson currently at the controls mixing the new album for Sydney funksters Skunkhour. Call Bill on (02) 357 1841. **Sing Sing** have splurged and bought themselves some great studio gear. The list includes two Summit Audio TLA100A valve compressors, a Summit Audio EQF100 valve parametric EQ and a Summit Audio valve stereo mike preamp. As if that isn't enough, they've also got themselves an API Lunchbox containing mike preamps and graphic and parametric EQ. Whew! Call Sing Sing on (03) 428 4622.

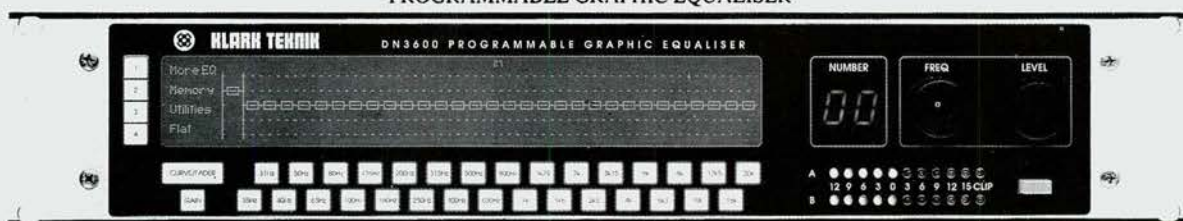
Sony Music Studios' Mark Skarski has disappeared from the studio and been reincarnated on the first floor, in the guise of Australian Artists Product Manager. Call Sony on (02) 332 0320.

The Enterprise are always on the look out for reputable and serious musos, programmers and songwriters to add to an already strong pool of talent. Send a demo of your copyrighted work (two tracks maximum) and a stamped, self addressed envelope to Graeme Storer, 51 Windsor Rd, Dulwich Hill NSW 2203.

Tracks Australia Sound Production do sound production for video, television, film and radio. They've got two studios (8 & 24 track), and a Fairlight MFX-2. Call Stephen Smith on (02)

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Osmond Electronics
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Write in Reader Service number: 134

Troy Horse Studios have added extra gear to their list, including a Behringer Pre-Q mike preamp with parametric EQ, some Ashley gates and EQ, and a pair of Tannoy Little Red monitors. Legendary solder expert Tony Polson (the technician behind the Paradise upgrade) has been doing his thing with Troy's Tascam console, replacing FET switches with relays and putting balanced outputs on the effect sends and monitor outputs. They've also upgraded to version 4.1 of VUMP, the studio management software. Call Kitty Of Troy on (02) 557 3129.

Grevillea Recording Studios have just installed an Alesis ADAT with AI-2. Combined with their Sadie hard disk system, they now have 16 track digital capability. Call Malcolm Jacobson on (07) 262 8522.

Taramalin Sound have moved to their new studio in Kingston, which they're very happy with. They've also given their own special little award for 'Strangest Artist' to Peter Howard. According to Allan, "In 15 years of recording, I've never worked on anything so weird. Peter's music is extremely alternative, with disjointed lyrics, disjointed drumming, random bursts of drum machine, and extremely distorted guitars. To the right audience, it's probably really good!". We couldn't contact Peter because he's touring Melbourne in his bus, which doubles as his home and his demo studio. You can call Allan at the new studio on (07) 208 9736.

Bel Air Sound have just installed a 600 dpi laser printer for their sheet music printing facility. Does this qualify as a studio upgrade? Ring Danny at Bel Air on (03) 563 7887.

Platinum Studios' director Jim Mountford was driving through Mount Hagen in Papua New Guinea when he spotted a villager wearing a 'Platinum Studios' t-shirt. He purchased it from a local market! Call Platinum on (03) 827 7483.

Studio 52 should have their new Soundtracs 'Tracmix 2' automation installed by the time this issue of Connections hits the streets, giving them full automation of their 36 channel in-line console in time for their next album project. Call Paul Higgins at Studio 52 on (03) 417 7707.

The Jam Tin Sound Studio are moving to new premises in the new year, with a 24 track studio. The new address is 5/20 Charlton Avenue, Cheltenham VIC 3192. For bookings phone Mark McCormack on (03) 582 2341.

Damien Gerards are busy as usual, recording albums for Amunda, Jamm Factory and Mass Appeal. The latter

ARTIST	PRODUCER	ENGINEER/S	NOTES
New South Wales All Music Manufacturing Krazy Creatures Lonnie Lee Alan Christiansen DJ Bobo INXS Airmotion Studio Geoff Vincent Minh Nouwen & David Kane	Geoff Sturre (02) 557 1169 Jeff Cripps Lonnie Lee Ross McGregor Geoff Sturre Paul Bryant Warners Contact Kristen Wolek Geoff Vincent Shane Fahey	Mastering Geoff Sturre Paul Bryant Paul Bryant CD Master Paul Bryant (02) 550-3863 Jason Blackwell Release for U.S.	CD Master CD Master CD Master 12" Vinyl 24 Track Demos
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Bush Traks Recording Studio Llew Mullins Great Divide Norpa Black Label Gary Dennis	Contact Ruth Miller (066) 89-1290 D. Hight G. Dutton/H.Vann Lyndon Terracini/Fred Cole D. Hight/Band G. Dennis	24 Track Dave Hight Dave Hight Dave Hight Dave Hight (02) 387-8362 Tim Powells Nick Mainsbridge Mark Forrester/Julian Slade/Daniel Gilliland David Russell/Daniel Gilliland (02) 660-8776 Album Mike Wood Album Mike Wood Russ Pilling (049) 36 1376 Steve Newton (02) 790 4097 Album Ralph Esther Ralph Esther Andrew Voigt Voice Overs Ralph Esther	24 Track Demos Album Soundtrack for Theatre Production Album Demos 16, 24 Tracking & Mixing Mixing Album E.P. 16/32 Track Demo Album E.P. Mixing Demo. 32 Track Album 24 Track Demo Demo Christian Album Voice Overs 24 Track Record Album Mix 24 Track Mixing Album 24 Track Demos Single Album Album Single
Charing Cross Studios Wofgang Tall Tales & True Jenny Morris Ruby My Dear	Contact Gordon Hervey Wofgang Nick Mainsbridge Electric Hippies Ruby My Dear Contact Ella Bell Dave Steel Russ Pilling Band Dave Price Price/Wood Band Contact Ed Matzenik John Williamson/Steve Newton Contact Fran Esther Tony Vadala Ralph Esther Paul Gray/Michel Rose Band Greg Meyer Ralph Esther Gary Kroehnert	(02) 660-8776 Album Mike Wood Album Mike Wood Russ Pilling (049) 36 1376 Steve Newton (02) 790 4097 Album Ralph Esther Ralph Esther Andrew Voigt Voice Overs Ralph Esther Guy Dickerson Shane Fahey (02) 357 1599 "Woody" Annison (02) 318 1220 John Hresc/Craig Beck John Hresc Doug Henderson Doug Henderson John Hresc Single (02) 624 4484 R. Zimola R. Zimola R. Zimola (02) 264 7734 Fraser Stuart Fraser Stuart Tom Kazas/Phil Munro Kevin Shirley/Phil Munro Randall Walker/Fraser Stuart Russell Pilling/Phil Munro Phil Munro Tom Kazas/Phil Munro Phil Munro Brett Stanton/Fraser Stuart Randall Walker/Phil Munro Fraser Stuart/Jason Nairnsay 16 & 24 Track Rob Taylor/Dave Henderson/Chris Greenhaig Rob Taylor (02) 332-0320 Simon Tonx Tim Whitten Simon Tonx Simon Tonx (02) 564 3225	Demos Album Demo 16, 24 Tracking & Mixing Mixing Album E.P. 16/32 Track Demo Demo Christian Album Voice Overs 24 Track Record Album Mix 24 Track Mixing Album 24 Track Demos Single Album Album Single 16 Track Demos Pre-Production Album Pre-Production Album Track Instrumental Mix E.P. Album E.P. Mixing Album Mixing Single Mix Mixing E.P. Tracking Album T.V. Soundtrack Album Tracking Single Month Lock-Out CD Single & Remises 24 Track E.P. Tracking/Mixing E.P. Mixing Single Re-mixing Single Re-mixing 8 Track Midi Suite
Damien Gerard Studios Amunda Dream Seed Mass Appeal Tristan Chord Hydrosaurus	Contact Ed Matzenik John Williamson/Steve Newton Contact Fran Esther Tony Vadala Ralph Esther Paul Gray/Michel Rose Band Greg Meyer Ralph Esther Gary Kroehnert	(02) 660-8776 Album Mike Wood Album Mike Wood Russ Pilling (049) 36 1376 Steve Newton (02) 790 4097 Album Ralph Esther Ralph Esther Andrew Voigt Voice Overs Ralph Esther	Demos Album Demo 16, 24 Tracking & Mixing Mixing Album E.P. 16/32 Track Demo Album E.P. Mixing Demo. 32 Track Album 24 Track Demo Demo Christian Album Voice Overs 24 Track Record Album Mix 24 Track Mixing Album 24 Track Demos Single Album Album Single
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YOUR MUSIC IS SAFE WITH US



So YOU want to buy a Recorder!

Studio Editor Greg Simmons defines the various different TYPES available, along with a blow-by-blow account of What It All Means!

"Mary had a little lamb." Believe it or not, these were the first sounds to be recorded and replayed to the public. The words were spoken by the famous inventor Thomas Alva Edison, the year was 1877, and the recording system was the phonograph; Edison's most impressive invention.

Edison's phonograph used wax cylinders to store the recorded sound. Since World War II, magnetic tape has been the most common medium for sound storage, and the machines that record sound onto tape are called, understandably, 'tape recorders'.

We're living in a time that future sound engineers and industry commentators alike will describe as "...crucial and evolutionary in the development of sound recording". In addition to the tape recorder, we've also got hard disk recorders, optical disc recorders, magneto-optical recorders and digital audio workstations (DAWs). For the '90s, it's far more appropriate to group all these technologies under the simple heading of 'recorders'.

The following is an overview of recorder technology, it's specifications and applications.

GENERAL FEATURES

Whether you're in the market for an analogue or digital recorder, there are a number of general features to consider. These include sound quality, storage media, remote control, synchronisation and others.

Sound Quality

No matter what recording technology you're considering, sound quality will almost certainly be one of your main criteria. The technical specifications to look out for here include frequency response, headroom, signal-to-noise ratio, dynamic range, crosstalk and distortion. Of course, the final test of sound quality should be left to your ears.

Storage Media

When comparing different types of recorders, you must think carefully about what the sound is being recorded onto. This is called the 'storage medium'. Most recording formats use magnetic storage, therefore all the usual precautions must be taken — keep them away from strong magnetic fields, avoid shock and high temperatures, and prevent the build-up of mould on the magnetic surface.

Open reel magnetic tape is used by analogue and digital reel to reel recorders. It's

biggest advantage over many of the other systems is the ease with which it can be edited — simply cut the offending pieces of tape out with a razor blade and editing block, and stick the good bits together again with some splicing tape. This form of editing is available on all analogue open reel recorders, and some open reel digital recorders.

Cassette-based storage media is becoming increasingly popular. Cassette decks use the well-known Philips' Compact Cassette format, as do most integrated systems (e.g. portastudios). DAT recorders use a tape that looks like a miniaturised video tape, measuring about half the size of a compact cassette. Most MDMs (Modular Digital Multitracks, such as Alesis' ADAT) use video tape formats, as do hi-fi video recorders. Philips' DCC (Digital Compact Cassette) uses a tape with the same overall dimensions as the compact cassette. All of these systems are cassette-based, convenient for handling and storage, but difficult to edit.

Disk-based storage media has the big advantage of very fast and accurate access to any point in a recording. The recorded material is stored on a high speed rotating disc that is accessed by a moving head, so there is no need to rewind or fast forward a tape to the appropriate point. It's possible to go from the end of the last song to the beginning of the first song within a couple of disc rotations. Hard disk recorders and DAWs record onto hard disks like those found in personal computers, and offer superb editing features. CD Recorders record optical information onto specially developed blank compact discs that can only be used once. Sony's Mini Disc records onto re-recordable magneto-optical discs that can be used thousands of times over.

Remote Controllers and Autolocators

Many recorders come with a remote controller, which is very handy because they sometimes make a considerable amount of noise when operating. With a remote control, you can place the recorder well away from your mixing position, where you can't hear it, and still have convenient control of the recording functions. Some manufacturers make recorders that have only the very basic controls on their front panels — you must use the remote control to access all of their functions.

An autolocator is often included as part of a remote controller, or as an optional extra. It

allows you to store and recall different points within the duration of a recording. For example, you can store the beginning of each verse into memories in the autolocator. If you want to go the beginning of the first verse, you just select the appropriate memory number and the autolocator will take the recorder to that point. Autolocators also allow functions such as looping and repeat playback, which is very useful when you're equalising a drum fill that only lasts a few seconds. Instead of constantly hitting rewind and play, the autolocator can do the job for you.

SMPTE and Midi Synchronisation

For many years, large studios have been running two multitrack recorders synchronised together to provide more tracks. This usually requires the use of special 'machine controllers' and SMPTE timecode, which must be recorded onto one track of each recorder to be synchronised. You lose one track from each machine to the timecode, so two 24-track recorders synchronised together offers a total of 46 tracks. Recorder synchronisation was traditionally an expensive exercise, but in recent years smarter recorders have hit the market that are 'synchronisation ready', just connect them together via a special cable and away they go.

Midi synchronisation is also available for some recorders. This is a great feature if you've got a Midi-based studio, with all your equipment controlled via a Midi program such as CuBase. There are few things in this world more impressive than watching a little Fostex R-8 analogue multitrack recorder whizz backwards and forwards under Midi control from a personal computer, and staying in perfect synchronisation with a bunch of keyboards, drum machines and samplers. If you want Midi control, you'll need to check out what options are available for the recorders you're considering. You'll probably need a SMPTE reader/generator to put timecode onto tape. The same box will also have to translate between SMPTE timecode and Midi Time Code (MTC) so it can communicate with your Midi system.

Varispeed

Varispeed is the recorder's ability to change speeds slightly, a very useful feature when, for example, you've got to record a piano that is tuned differently to the rest of the recorded music. Rather than having the piano re-tuned to the music, simply use the varispeed. Speed-

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SO YOU WANT TO BUY A RECORDER

(Continued)

ing the recorder up will shift the pitch of the recorded sounds up, while slowing the recorder down will shift the pitch of the recorded sounds down. With careful adjustment, it's possible to tune the recorded sounds to the piano. When the piano recording is completed, return the recorder to normal speed and everything will return to the correct pitch, with the piano now in tune.

Varispeed is also useful to help vocalists reach notes they can't easily reach (just slow the machine down and the pitch will drop accordingly). The amount of speed variation is typically around $\pm 15\%$, enough to shift the pitch up or down a couple of semitones.

Durability, Size and Portability

The final points to consider when choosing a recorder concern durability, size and mobility. Durability is something you can often tell by the look and the feel of the equipment. Do the buttons and knobs feel solid and reliable, or cheap and nasty? Does the transport sound good and solid, or inconsistent and clunky? A durable recorder, like all good technology, will inspire a confident feeling in the user.

Since the introduction of MDMs, more and more people are taking their recorders outside the studio, preferring to take advantage of their home environment, or of old churches, warehouses, and other interesting acoustic spaces. They bring the recorder back into the studio for the mixdown.

RECORDERS IN DETAIL

The following are descriptions of the numerous types of analogue and digital recorders, along with details of their storage media and capacities. Note that, unless otherwise specified, most digital recorders use 16-bit words and offer sampling rates including 44.1 kHz and 48 kHz.

Open Reel Analogue Recorders: Analogue recording onto open reel tape.

Traditional reel to reel tape recorders vary in size from tiny shoeboxes up to large washing machines. Formats range from two tracks on 1/4 inch tape to 32 tracks on two inch tape. In all cases, faster tape speeds and larger track widths produce better high frequency response and less noise. Most professional machines run at speeds of 15 ips and 30 ips, while many semi-pro machines run at speeds of 7.5 ips and/or 15 ips. Many of the smaller formats, such as eight tracks on 1/4 inch tape at 7.5 ips, rely on built-in noise reduction systems to achieve acceptable dynamic range and signal-to-noise ratios.

More recently, analogue multitrack recorders are facing their biggest challenge ever, competing with the smaller, smarter and faster MDMs (see 'Modular Digital Multitracks'). Nonetheless, a high quality professional analogue recorder can deliver stunning results when running one of the newer 'hot' tape

formulations (e.g. Ampex 499 or BASF 911). Under pressure from clients who have experienced the low noise and dynamic range of digital recorders, some studios have invested in Dolby SR noise reduction for their analogue multitracks, claiming it gives them dynamic range and signal-to-noise figures comparable to digital systems.

Open Reel Digital Recorders: Digital recording onto open reel tape.

There are two standards for open reel digital recorders: DASH (Digital Audio Stationary Head) and PD (ProDigi). Machines from Sony and Tascam follow the DASH format, while those from Otari and Mitsubishi use the PD format. Note that Mitsubishi no longer manufacture digital multitracks, although their machines are still in use.

These reel to reel machines are physically large and heavy, like their analogue counterparts. Multitrack recorders are currently available in 24, 32 and 48 track configurations using one inch wide tape. Stereo recorders are available using 1/4 inch tape.

Cassette: Analogue recording onto Philips' Compact Cassette format.

The cassette format squeezes four tracks (two on either side) onto 1/8 inch wide tape running at 1.88 ips. Surprisingly, it offers good performance if you're careful and look after it. To get the best results from cassette technology, look for one of the new machines that has three heads, Dolby S noise reduction, adjustable bias, and records onto the metal tape formulation (check out the new range of Dolby S cassette decks from Sony). If you're looking for a cassette deck for dubbing in the recording studio, Tascam's 103 and 112 are widely used, as is Nakamichi's up-market MR-1.

Integrated Analogue Systems: Analogue recording onto Philips' Compact Cassette or other proprietary cassette formats.

Integrated systems incorporate a recorder and a mixing console in the same package, and are traditionally known as 'portastudios'. However, some of these systems offer a high level of all-round performance and don't deserve the compromising image associated with the word 'portastudio' — hence the term 'integrated system'.

All of the currently available integrated systems use compact cassette as the recording medium. Historically, Tascam's 388 used seven inch open reels, and Akai's MG1212 and 1214 used a proprietary tape that looks very much like a Beta video tape. These machines redefined the meaning of the word 'portastudio', but are no longer commercially available. Of the currently available machines, Tascam's 688 Midistudio represents the state of the analogue art, featuring a 10 channel/20 input mixer, eight track recorder, Midi automation and external synchronisation.

Hi-Fi Video: Analogue recording onto JVC's

VHS or Sony's Beta video cassette formats.

Believe it or not, hi-fi video is an excellent low-cost analogue recording medium that offers low noise and wide dynamic range. Not surprisingly, some home studios and smaller studios use hi-fi video as a master stereo recording system. For an investment of around \$1000, you can buy a very good hi-fi VCR for your studio. During downtime you can use it for watching videos, too...

Not to be confused with ordinary video sound, the hi-fi video system uses frequency modulation, just like an FM radio station, to raise the audio signal up to frequencies that can be written by the high speed video heads. The audio signal is recorded as one combined track across the width of the tape, with the video signal recorded over the top of it. On playback, separate heads and demodulation circuits separate the video from the left and right audio channels. For the cost of a good video tape (e.g. \$25) you can get two or three hours of recording with all the nice video things like an accurate time read-out, indexing and an infra-red remote control.

Modular Digital Multitracks (MDMs): Digital recording onto JVC's S-VHS or Sony's Video-8 video formats, or hard disk.

Most MDMs use a cassette-based tape format and get their name from their built-in modularity. A typical MDM offers eight digital audio tracks and the ability to be connected to other similar MDMs for expansion purposes. Once connected, two or more MDMs will behave as if they were one larger recorder, maintaining perfect synchronisation and allowing convenient control from a single remote controller. With two eight track MDMs you get 16 tracks, with three you get 24 tracks, and so on. MDMs are probably the hottest selling items in the recording world at this time.

There are currently five cassette-based MDMs on the market. Akai led the way with their ADAM system, released in Australia in late '89. It records 12 digital audio tracks on an 8 mm Video-8 tape. Up to three units can be linked together to provide 36 tracks of digital recording.

Alesis released their popular ADAT system in 1992, offering eight tracks of digital recording on S-VHS tape that runs for 40 minutes. Up to 16 ADATs may be interlocked to provide 128 tracks. Tascam followed soon after with their DA-88, offering eight tracks of digital recording on Video-8 tape that runs for 108 minutes. As with the ADAT, up to 16 DA-88s can be interlocked for a total of 128 tracks. The latest entry is the Fostex RD-8, which is compatible with the Alesis ADAT and shares the same basic features but has many additional built-in functions.

Yamaha's DRU8 is a recorder that fits the cassette-based MDM profile but isn't marketed

(continued over)

SPECIFICATIONS *explained*

The following are brief descriptions of the terms you're likely to be confronted with when buying a recorder. While most of the analogue specifications are widely understood, there are many new ones related to digital recorders. Also note that traditional analogue specifications are often slightly modified for digital applications. Where possible, these differences have been explained below.

Frequency Response

Frequency response is usually plotted on a graph of amplitude (vertical axis) versus frequency (horizontal axis), and shows how well the recorder performs over the audible frequency range from 20 Hz to 20 kHz.

Good analogue machines offer a reasonably flat response that gradually tapers off at or beyond the 20 kHz upper limit. Good digital recorders offer a flat frequency response all the way up to 20 kHz, then cut-off very sharply to avoid a digital audio problem known as 'aliasing'.

Dynamic Performance

The dynamic performance of a recorder depends on its headroom, signal-to-noise ratio and dynamic range, which are all measured in decibels.

Headroom

Most pieces of analogue technology have a 'nominal operating level', which is the signal level when the meters read 0 dB. Headroom defines how far above 0 dB you can go before reaching distortion. The more headroom an analogue recorder has, the more 'open' and 'clean' it will sound.

We don't often find a headroom figure for a digital recorder, because 0 dB on its meters usually represents maximum signal level before distortion.

Signal-To-Noise Ratio

Signal-to-noise ratio (also called 'SN ratio' or 'S/N') tells us how quiet the recorder is. It's a measurement of the background noise level compared to the nominal operating level of 0 dB, so a signal-to-noise ratio of -60 dB means the noise is -60 dB below 0 dB. A good digital recorder could have a signal-to-noise ratio of -105 dB, while a good analogue recorder could have a figure of around -70 dB (without noise reduction).

Dynamic Range

Dynamic range can be defined as the difference between the softest and loudest signals that can be reproduced by a circuit, and is usually measured as the difference between the headroom and the signal-to-noise ratio.

Dynamic range for analogue recorders is not often quoted because it depends on the type of tape and whether any noise reduction systems are in use. In practice, most Digital recorders specify a dynamic range greater than 90 dB.

Crosstalk

Crosstalk occurs whenever sound from one audio channel 'breaks through' and can be heard from another channel. It occurs on all sorts of audio equipment, but is particularly noticeable on analogue equipment. Analogue recorders

suffer crosstalk when sound from one track becomes audible while listening to an adjacent track. A good analogue multitrack recorder would have a crosstalk figure around -45 dB in replay mode, meaning the crosstalk is 45 dB softer than the nominal signal level. In comparison, digital recorders have crosstalk figures around -90 dB.

Distortion

Distortion exists in a recorder whenever the replayed signal is not an exact replica of the original signal. Analogue recorders have distortions caused by non-linearities in the tape itself and in the record and replay heads. Digital recorders have distortions due to the conversion processes from analogue to digital and digital to analogue. Whatever the causes of distortion, it is always measured as a fraction of the total signal level and is quoted in either percentage or decibels (e.g. 0.01% or -30 dB). Lower percentages indicate less distortion, as do higher decibels.

Tape Speed

Tape speed affects the high and low frequency performance of an analogue recorder. With increasing speed, the high frequency performance increases, but at the same time the low frequency performance decreases. Professional analogue recorders run at two speeds, 15 ips and 30 ips ('ips' means 'inches per second'), while cassette decks run at 1.88 ips.

Track Width

Track width refers to how wide a single track is on a length of magnetic tape. A wider track allows more magnetic energy to be put onto tape, resulting in less noise from an analogue recorder, and greater replay accuracy from a digital recorder.

Wow and Flutter

Wow and flutter are two types of unwanted speed variations which affect analogue recorders, causing the pitch of recorded sounds to shift up and down. Wow is a very slow speed variation, while flutter is a high speed variation. Wow and flutter are measured as a percentage of the tape speed, with typical values being around 0.02% for a good analogue recorder. A cheap cassette deck with a cheap cassette tape could have a wow and flutter figure as high as 0.05%, which is not very good.

Speed variations also exist in the transport mechanisms of digital recorders, but the digital system is able to compensate and correct them.

Noise Reduction

Noise reduction systems improve the signal-to-noise ratio and dynamic range of analogue recorders. They can be purchased separately and used with any analogue recorder, although some recorders have noise reduction systems built into them. Dolby is undoubtedly the most popular form of noise reduction, followed closely by dbx. Both of these systems are broadly called 'encode/decode' systems, since the sound must be encoded before recording, and decoded on replay.

(continued)



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SO YOU WANT TO BUY A RECORDER

(Continued)

as such. It offers sample rates of 32 kHz, 44.1 kHz and 48 kHz, uses a 20-bit word size for 120 dB dynamic range, and records onto 8 mm tape. By using Yamaha's RC24 remote controller, up to three DRU8's can be locked together to provide 24 tracks.

There are also MDMs that use hard disks instead of cassette formats. They stand apart from other hard disk recorders because they are self-contained rack-mounting units which can be interlocked for expansion. Akai's DR4 offers four simultaneous tracks of recording onto hard disk ('simultaneous' meaning it contains four complete ADCs and DACs, allowing it to record four separate sound sources at once). Total disk capacity of up to 2 Gigabytes can be accessed for up to 360 minutes of hard disk storage. A maximum of four DR4s can be connected for 16 track operation. Roland's DM-80 is a simultaneous four track hard disk recorder that can be internally expanded to eight tracks. As with the DR4, numerous DM-80s can be interlocked to create a much larger recording system. See 'Hard Disk Recorders' below for more details on the hard disk format.

Hard Disk Recorders: Digital recording onto hard disk.

As their name implies, these recorders use the hard disk of a personal computer as the storage medium. They're usually based on a powerful PC running sound recording and editing software, with ADCs and DACs connected to allow input and output of analogue audio signals.

One of the major advantages that a hard disk recorder has over a tape system is fast access: you can get from the end of a track back to the beginning, or any other point, within a fraction of a second. These recorders are also capable of displaying the audio signals as waveforms on the computer screen, making them very powerful tools for editing. Many studios use hard disk recorders for editing finished stereo mixes, particularly from DAT master tapes.

A big disadvantage is storage: for CD quality sound, one minute's recording on one track requires approximately 5Mb of disk space. Obviously, these systems require massive hard disks to do any really useful work, with 600Mb or more being normal. Hard disks are expensive and cannot be simply removed and put away for later, so it's often necessary to dump everything off the hard disk when it's time to start a new job. If the previous job is complete, it may be possible to simply erase it all. If the previous job is incomplete, then the contents of the hard disk must be backed up onto a medium such as DAT, and stored for later use.

Digital Audio Workstations (DAWs): Digital recording onto hard disk.

For the purposes of this overview, DAWs offer the same features as hard disk recorders, but are designed as dedicated stand-alone prod-

ucts with controls designed specifically for digital audio editing. They are often much more powerful, faster and expensive than a hard disk recorder. Fairlight's MFX2 is an excellent example of a DAW, as is Lexicon's Opus.

DAT (Digital Audio Tape): Digital recording onto Sony's DAT cassette format.

DAT has become the industry standard two-track digital recording format. It offers up to 120 minutes of recording on a 3.8 mm wide tape housed in a package about half the size of a compact cassette. Sampling rates for DAT are 32 kHz, 44.1 kHz and 48 kHz.

DAT was invented by Sony and introduced in the mid to late '80s. Resistance from major US record companies, afraid of a new piracy industry, stopped DAT dead in its tracks (sic) as a consumer format. Due to this, the format never had the chance to develop to its full potential. No matter what anyone tells you, there are a lot of DAT recorders out there that simply don't do the job properly. Important things to look out for include: the ability to sample at 44.1 kHz on the analogue inputs; writing of absolute time; and editing of start, stop and skip IDs.

CD Recorders: Digital recording onto optical disc.

CD Recorders create one-off compact discs that can be played on any CD player, using specially developed blank discs. They are a 'write once' technology, which means you cannot erase and re-use a disc. Unlike most other digital recording formats, they offer the most permanent and reliable form of storage currently available. The discs are an excellent medium for permanent storage of finished mixes.

Integrated Digital Systems: Digital recording onto numerous cassette formats.

To make a distinction with DAWs, we'll define integrated digital systems as including a digital recorder and a digital mixing console, but without a hard disk recorder. Yamaha's DMR8 is an excellent example of an integrated digital system, incorporating a fully digital 24 channel mixer, 11 digital effects and an eight track digital recorder. It offers sampling rates of 32 kHz, 44.1 kHz and 48 kHz, uses a 20-bit word size for 120 dB dynamic range, and records in DASH format onto an 8 mm tape. It can be expanded to 24-track recording by the addition of two Yamaha DRU8 MDMs.

Sony F1 and PCM 501, 601, 701: Digital recording onto video tape.

In the early '80s, perhaps as a forerunner to DAT, Sony launched a number of exciting stereo digital 'recorders', which were actually digital processing boxes that required connection to a high quality VCR for the storage medium. Stereo digital recording finally became affordable for the small studio. The first of these was the F1, a portable unit that came with its own portable VCR. Other models to follow included the 501, 601 and 701, all processors that required connection to a VCR. Although no longer available, they are still worth

a mention for buyers in the second hand market. Coupled with a hi-fi VCR, these systems offer a four track simultaneous recording system (two digital and two analogue) that is ideal for doing analogue and digital recordings simultaneously, or for recording live gigs (stereo o/p from desk onto digital tracks, stereo room mikes onto analogue tracks).

DCC and Mini Disc: Digital recording onto Philips' DCC cassette or Sony's Mini Disc formats.

These two formats represent the latest releases in the world of digital recorders. Philips' DCC (Digital Compact Cassette) is a tape-based system intended to be a progression from the compact cassette. It runs at the same speed as cassette, and can also play — but not record onto — ordinary compact cassettes. Sony's Mini Disc is a miniaturised disc system that looks very much like a tiny floppy disk.

Both these systems use data reduction techniques to fit over an hour's worth of recording onto storage media capable of recording only about 15 minutes. The data reduction techniques are based on psychoacoustic principles, removing information that is considered inaudible using a process known as 'perceptual coding'. DCC removes 75% of the original information, while Mini Disc removes 80%.

Both formats are technically ingenious, and offer sound quality close, but not equal, to compact disc. For these reasons, it seems like half the world's hi-fi critics, consumers and sound engineers can't wait for them to gain mass acceptance, while the other half hopes they go away!

CONCLUSION

Whether you love them or hate them, digital recorders have fallen in price to the point where they are generally cheaper than analogue recorders. DAT and MDMs are the recorders responsible for breaking the digital price barrier over the last few years, turning a luxury item into an everyday commodity. Analogue recorders will become the luxury items, held in high regard for their characteristic sound.

Interestingly, the arrival of digital technology has sped up the development of analogue technology. After years of Dolby A, B and C, Dolby Labs have released Dolby SR and S, bringing digital specs to analogue recorders. Tape manufacturers have brought out new and greatly improved tape formulations. Digital recording has stimulated considerable performance gains in analogue equipment, and for this we all owe it some gratitude. The big question is, "Why couldn't we have had this improved analogue stuff earlier?"

While you ponder this question, there are plenty of good recorders — analogue and digital — out there to choose from. Weigh up the cost, performance and specifications against your requirements, give them a good listen, and choose carefully. *

RECORDER SPECIFICATIONS EXPLAINED (continued)

There are numerous types of Dolby noise reduction. Dolby A was introduced in 1965 and designed for professional recording applications, offering up to 15 dB of noise reduction. Dolby B was introduced in the '70s and designed for cassette decks, offering up to 10 dB noise reduction. Dolby C was introduced for cassette decks in the late '70s and offers up to 20 dB of noise reduction. The latest systems from Dolby include Dolby SR, introduced in the late '80s and offering up to 25 dB of noise reduction, and Dolby S, a semi-professional version of SR that is found in many semi-pro analogue multitrack recorders and some of the very latest cassette decks.

The dbx process offers up to 30 dB of noise reduction, with two types of processing: Type 1 is designed for professional recording applications, and Type 2 is designed for cassette decks and semi-professional applications. dbx is a simpler process than Dolby, offering a very impressive amount of noise reduction but with greater chance of audible side effects such as pumping, breathing and exaggeration of frequency response errors if the recorder is not correctly aligned.

ADCs and DACs

Also known as A/D and D/A, these are the devices that convert between analogue and digital signals. ADC stands for 'Analogue to Digital Converter', and DAC stands for 'Digital to Analogue Converter'. The quality of these components contributes significantly to the overall quality of any given digital system.

Sampling Rate and Word Size

Digital circuits work with numbers, one at a time, and cannot deal with a continuously changing quantity such as an analogue signal. Instead, they take a series of measurements of the signal's voltage, convert each of these into a number that represents the voltage's amplitude, and process the numbers individually. On replay, the numbers are converted back into voltages, in the same order they were measured, and the original signal is (theoretically) recreated. The process of measuring the analogue signal's amplitude and converting it into a number is called 'sampling', and the number of samples taken per second is called the 'sampling rate'.

Although each sample is converted into a number that represents its amplitude, there is a limit to how many numbers a digital system has available. This means every sample has to be rounded off to fit the number that most closely resembles it. The 'word size' determines how many numbers are available in any given digital system. It's expressed in 'bits', which are the basic counting units of digital systems.

Sampling rate is usually expressed in kHz, while word size is expressed as a number of bits. The basic rules are: 1) higher sample rates offer better high frequency performance, and 2) larger word sizes offer better amplitude linearity.

As an example, compact disc has a sampling rate of 44.1 kHz and a word size of 16 bits. This means it takes

44,100 samples per second, and each of those samples is represented by one of 65,536 numbers (the total available to a 16-bit system).

Anti-Aliasing Filters

Digital systems suffer a problem known as 'aliasing', which occurs when the audio signal contains a frequency that is higher than half the sampling rate. This creates a new frequency that has no musical or harmonic relation to the original signal, and sounds dreadful. To prevent this problem, an anti-aliasing filter is fitted in front of the ADC to remove any frequencies above half the sampling rate.

Oversampling

Oversampling is an interesting technique used to improve the sound of digital audio. The industry standard sampling rates of 44.1 kHz and 48 kHz mean that anti-aliasing filters have to cut out everything above 22.05 kHz and 24 kHz respectively, yet leave everything below 20 kHz untouched. These filters require very severe roll-offs which, as a side effect, created audible problems down below 20 kHz. Oversampling prevents these problems by allowing a much less severe filter to be used.

To explain oversampling, we'll use two times oversampling and a 44.1 kHz sampling rate as an example. During recording, the ADC samples at two times the required sampling rate, so instead of using 44.1 kHz it uses 88.2 kHz. Now the system can record frequencies up to 44.1 kHz (half the sampling rate) before aliasing occurs. This means the anti-aliasing filters don't need such severe roll-offs and create far less problems down below 20 kHz. To convert back to a 44.1 kHz sampling rate, the system simply discards every second sample. For four times oversampling, the ADC samples at four times the sampling rate, and so on.

CD players use a similar system for playback, with additional samples mathematically calculated and inserted between the real samples to create a higher sampling rate. Amazing, huh?

SCMS Copy Protection

SCMS is a term you'll see a lot of when you're looking at stereo digital recorders such as DAT, DCC and Mini Disc. It stands for Serial Copy Management System, and was designed to prevent people from making lots of direct digital copies of CD onto DAT. SCMS allows you to make one direct digital copy from CD to DAT, typically via the SPDIF connections. A special 'flag' is set in the subcode of the digital audio on the DAT tape, preventing further digital copies from being made from that DAT copy.

While this is a great system to prevent piracy, it can be a pain in the butt for sound engineers. Fortunately, most professional DAT machines either don't have SCMS, or have the ability to switch it off. Interestingly, the AES/EBU interface does not include any SCMS information. If you're doing dubs via the AES/EBU interface, you won't have any SCMS problems.

-Greg Simmons.

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Buyers Guide

RECORDERS

All prices correct at Dec. 1, 1993, and include sales tax unless noted.

TASCAM. From Teac Aust P/L 03 646 1733

DA-30 Rack mounting DAT recorder, 2 head, AES/EBU-SPDIF i/o, SCMS bypass facility, hand wired remote, D-A stage industry acclaimed as highest audio quality \$3890

DA-60 4 head DAT recorder, inbuilt chase, lock synchroniser w/- Sony 9 pin protocol. Instant start via inbuilt RAM buffer w/- edit facility, D-A same as DA-30-remote optional \$13,224

DA-88 8 track recorder, Hi-8 format giving 113 min record time, inbuilt sync card option w/- Sony 9 pin and MMC, remote option w/- 48 track function select and 9 unit control \$13,398

RA-4000 Hard disc recorder editor, Non-PC based. High speed functions via dedicated user friendly interface. Expandable from basic system which is 4 track w/- 36 track min rec time \$13,398

Panasonic Australia 02 9867 400

SV-3700 Pro DAT with shuttle wheel, AES/EBU input/output, high performance A-D one-bit converters, 4-digit error rate display, instrumentation quality i/o interface \$3495

AKAI: Australis Music Group P/L 02 938 3466

DR4d Digital recorder 4 track simultaneous record/playback hard disk recorder. System expandable to 16 tracks. Extremely simple operation, powerful editing feature including analog style jog/shuttle. MIDI/SMPYE sync option available. \$4495

DL4 Remote editor/control for DR4 system. Allows remote editing and control of up to 16 track DR4 system. \$2295

ALESIS: Electric Factory 03 480 5938

ADAT Digital multitrack recorder 8 tracks per unit, modular system allows expansion

to 128 tracks, 16 bit linear 48 khz sample rate uses S-VHS cassettes + 4 dbu units inputs and outputs balanced Elco connector, -10dbu unbalanced jacks. \$9599

BRC ADAT master remote control adds simple video and midi synchronization digital assembly editing and signal routing, multitrack autolocator with 46C locate points, controls up to 16 ACATS simultaneously \$4799.

AI-1 ADAT to AES/EBU and S/PDIF converter with sample rate converter. Allows digital transfer of ADAT data to anc from DAT, CD, etc \$2199

AI-2 ADAT multipurpose synchronization interface by timeline for complete video, film, multimedia using smpte, MTC 9 pin, MMC and timeline LYNX protocols \$2399.

Atesis

RMB Remote meter bridge with 32 channels of metering for 4ADAT system momentary/continuous peak mode, variable decay speed, rack mount or mount on ERC connecting multicore supplied \$2499.

Sonic Solutions, from: Syncrotech (02) 417 5088

All systems require AppleMac or Quadra
Sonic Station 11 2 channels of digital I/O 12 tracks playable infinitely variable cross fades up to 24 bit recording resolution. Background loading expandable \$9,873

Sonic Quattro 4 channels of digital I/O 12 tracks playable. Infinitely variable cross fades up to 24 bit recording resolution background loading and dumping expandable \$12,973

Sound For Picture 8 channels of I/O 24 tracks playable same as above with options of machine control. Time comp/exp, EDL translator, varispeed, manual declicking (no noise™), optical and A/D/A converters. Can be expanded to 24 I/O and 72 tracks payable \$62,560

AMS/NEVE from: Syncrotech (02) 417 5088

Audio file Optica Spectra control surface (colour LCD) 1 quad ADC/1 quad DAC 1 MO drive, interconnecting cables. Completely self contained stand alone unit \$66,819.

Audio file Spectra M8 Spectra screen, 4 in and 8 out, 16 output card frame, 1 quad ADC/2 quad DACs. DAT backup card, 1 disk pack and 2 half height drives (2 hours storage) \$79,570.

Audiophile Spectra M 16 As above but with 16 outputs (4 quad DACs) and 4 half height drives (4 hours storage) \$105,274

Audiophile Spectra M24 as M8 but with 24 outputs (6 quad DACs) 2 MO drives. * \$157,305
* All systems can be fitted with EDL/ES-bus and VTRemulation software

Otari from Amber Technology 02 975 1211

DTR-7 Professional R-DAT recorder - 48/44.1/32 kHz. Sampling FREQ's, AES/EBU and SPDIF digital interfaces, 1-bit Delta Sigma A/D and Pem D/A converters, supplied with r/mount kit and I/R remote. \$4200

DTR-90T Advanced studio R-DAT recorder - 5 sampling rates, SMPTE/EBU timecode GEN/RDR/Synch, removable front panel/remote, RS-422 port, optional CD-149S R-DAT editor available. \$20,150.

MX5050MK1V/8 half inch 8-track analogue recorder, latest generation of this famous series, microprocessor controlled tape transport, gapless and seamless punch in/out, built-in mini autolocator \$17,200.

MX80/24 2 inch 24-track analogue recorder, heavy duty tape transport with 2 inch deckplate, 3 tape speeds, gapless and seamless punch in/out. Dolby HX-PRO, supplied with remote controller. \$75,000.

MTR 90111/24 2 inch 24-track analogue recorder, pinch rollerless tape transport, microprocessor servo system, 14 inch reel capacity with super fast tape transport (2400

ft/82 sec) supplied with remote session controller. \$99,000.

MTR100/24 2 inch 24-track analogue recorder, microcomputer control with automated record calibration/alignment, Dolby HX-PRO, 3 tape speeds 14 inch reel capacity, supplied with remote session controller. \$140,000.

DTR-90011 32 track digital multi-track recorder PD format, digital/analogue input select matrix, adjustable punch in/out x-faces, extremely fast h/duty tape transport, remote control and auto locator \$290,000.

MX-5011N professional quarter inch 2 track recorder, 3 tape speeds with varispeed, dump edit, s/w monitor speaker. \$6,900

MX-55N quarter inch 2 track mastering recorder, microprocessor controlled tape transport, noiseless punch in/out 3 speed with +/- 20% varispeed, also available with CT timecode \$ 0,800

MTR-15 quarter inch 2 track mastering recorder - full auto alignment, microprocessor controlled tape transport with 4-point autolocator, jog/shuttle cue wheel, 12.5in reel capacity, also available with CT timecode \$25,400.

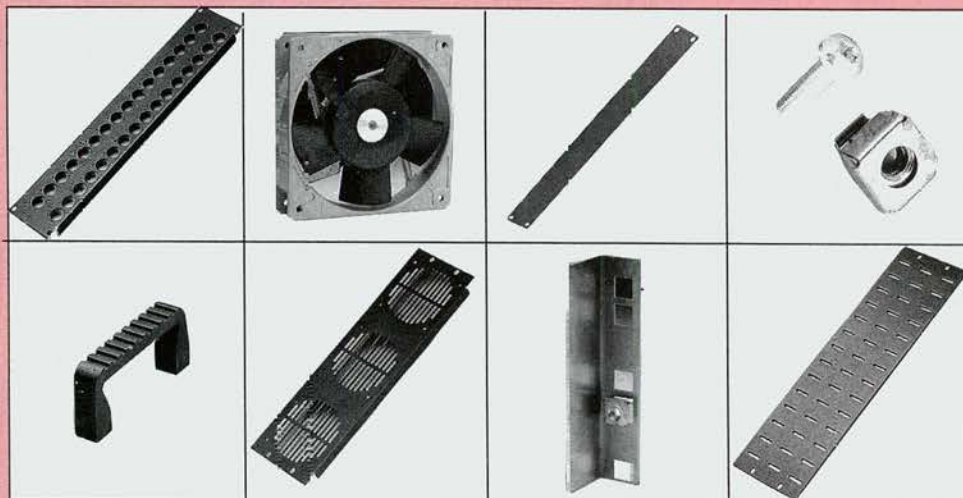
Fairlight from Amber Technology 02 975 1211

MF3 4 to 24 track digital audio recorder/editor, user interface allows super fast, intuitive operation, up to 24 tracks from a single disk drive or optical disk, wide range of system configurations possible. From \$70,000.

MFXTower. Floor standing 4 to 16 track version of the Fairlight MF3 uses identical MF3 user interface with identical, comprehensive editing features. From \$61,000.

Sony Aust (32) 887 6666

PCM2700A DAT recorder. DAT deck for studio use, 4 head (read after write) 4 mono



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direct drive transport, AES/EBU and SEC958 D/I/O. \$3710

PCME7700 "DATStation" DAT editor/recorder dual transport, non linear DAT editor, 2 x real time recording AES/ERU and analog inputs. \$22,950.

TCDD10Pro2 Pro DAT location recorder BAL MIC/line inputs, ABSTime, 4 motor direct drive transport. AES/EBU D I/O. \$3700

PCM7010 Professional T-code DAT recorder, ARS/T code recording capable, enhanced V2-O software includes advanced DSP functions. AES/EBU and IEC 958 D/I/O. \$6,700.

MOS-B1. Professional mini disc recorder, mini disc cart operation, Bal analog I/Os. Parallel remote control, fader start operation, supplied remote control for title features. \$3550.

NAGRA db Audio (03) 853 1070

Nagra D 4 channel self contained professional digital audio recorder from \$30,000.

Revox from: SYNTEC INTERNATIONAL (02) 417 4700

C115 Cassette Deck. Dual Capstan tape transport Dolby B/C - HX Pro Balanced in/out XLR music search auto scan zero locate bias / EQ front accessible. Retail : OA

REVOX C221 Pro Cassette Deck. User friendly layout and ergonomic design, balanced, unbalanced & digital outputs, fader start, serial bus. & parallel interface. Retail : OA

Studer A721 Pro Cassette Deck. Unique 4 motor system Calibration system dolby B,C, real time counter. Retail : OA

Fostex from: SYNTEC INTERNATIONAL (02) 417 4700

X18. 4 Track recorder with Midi Links, LED display remote punch in/out Battery operation. Retail \$979

X28. 4 Track Recorder dual speed dual-function and input/tape multi-mix controls. Retail : \$1399

X380S. 12 Channel 4 Track Recorder auto punch - in/out auto locate auto play, auto repeat and dolby 'S' noise reduction. Retail \$3499

GT10. 4 Track recording with additional cue track Dolby S, high speed and full midi functions. Retail \$3449

PD2. Portable Dat Recorder, full timecode capability multiple sampling frequencies start & end ID's. Retail : OA

RB. 8 Track Recorder on 1/4" tape, seven segment LED ten memory points auto play and return & pitch control. Retail \$5269

G16S. 16 Tracks on 1" tape track safe/ready select auto play & return, Pitch, Preroll optional - interfaces to allow SMPTE timecode and computer connections. \$19,699

G24S. 24 Tracks on 1" tape track safe/ready select - auto play & return - pitch - preroll optional - interfaces to allow SMPTE timecode and computer connections. \$25,999

D10. Digital Master Recorder, full complement of Start ID Program number, skip programming and 100 memory location. Retail : \$5749

D20B. 4 Head Digital master with Chase Sync function, 9 pin protocol built-in T/C generator and Varispeed. Retail : \$14,949

RD8. 8 Track Digital Recorder compatible with ADAT RS422 Port, Internal T.C. generator 100 locate memory points. Retail : \$10,999

Foundation 2000. Digital Audio Production Platform, 18 Analog inputs - 20 Outputs with two digital inputs and outputs - Multiple units can be cascaded up to 96 channels. Retail : OA

YAMAHA AUSTRALIA. (03) 699 2388

MT120S. 4 Track Multitrack Cassette Recorder, 4 ch mixer/4 track recorder, Stereo GEQ, 2 speed, DBX, stereo sub in, Punch in/out, Rehearse function \$995

MT8X. 8 Track multitrack cassette recorder, 9 input channels-4 bus mixer, 3 band EQ inserts, 2 aux sends, DBX, cue mix, Sync track, Computer transport with 2 locate points, repeat/rehearse & auto punch functions. \$3195

RCM1. Remote Control for MT120S \$99

YMC10. MIDI to Tape Synchroniser, FSK for MT120S/MT8X \$249

DMR8 All Digital Multitrack Workstation, 24 channel digital mixer and integrated 8 track 20 bit S-DAT recorder (features as per DRU8), can be expanded to 16 or 24 track using DRU8. Integrated with 11 digital effects processors 3 similar to SPX1000. Mixer has 3 band digital EQ, motorised faders, total recall memories & fully featured automation all synchronised to MIDI or TC. \$2700

DRU8 Digital Recorder, S-DAT (stationary head), 8-20 bit tracks, TC track, 2 analogue aux tracks, 120 dB dynamic range, 3 U Rack mount, Integrated synchroniser & autolocator to TC, MIDI, 9 PIN remote, full chase facility, V Sync, Digital I/O Y2 format, 8 into 2 digital monitor mixer. +/- 10% vari speed, rehearse & loop functions etc. \$2200

RC8 Remote Controller for 8 track DMR8/DRU8 systems \$1895

RC24 Remote Controller for 24 track DRU8/DMR8 system, allows "one machine feel" for 3 X DRU8 24 track system. \$4995

M20P 20 MIN Digital Audio Tape, 8 mm certified for DMR8 & DRU8 \$89

HARD DISK RECORDING

CBX05 Hard Disk Recording Interface, SCSI, for IBM / ATARI / MAC, analogue 2 in 4 out, AES/EBU in/out, Y2, 4 ch/4 bus Digital mixer, 2 aux sends, 4 band PEQ, automation, 2 internal digital multi effects, Sample rate conversion, 22K to 48K sample rates. Requires Cuebase Audio or Digital Performer software, and SCSI hard disk.

DSP8D 8 Track professional hard disk recorder from Digital Studio Processing. Audio replay from scrub to 8 times shuttle with user customised views of waveform profiles and project outline. Non destructive editing, up to 64 clips (vital tracks) per physical track. Intelligent editor reduces cut, paste, move, top, tail functions to one or two key-strokes and unique "see through" waveforms make editing judgements easy. Full featured with synchronisation and machine control for video post production. \$5000

DSP16D 16 Track professional hard disk recorder from Digital Studio Processing. Features as per 8 track except option available for networking and linking to provide 32 or 48 tracks of HD recording. \$6500

SPEEDC "Speed" Ergonomic control console for DSP hard Disk Recorders \$3895

TP180 180 Min removable hard drive or "Track Pack" for DSP HD recorders \$3895

SCSIDAT SCSI Data DAT drive for archiving projects on DSP HD recorders \$3895

Mix7 Automix software for DMP7D digital mixer for 8 inputs. Integrates editing, EQ, Effects and digital mixer functions with DSP HD. Fully automates all mixer moves synchronised to TC. \$3895

Mix1000 Automix software for DMC1000 digital mixer for 22 inputs. Integrates editing, EQ, Effects and digital mixer functions with DSP HD. Fully automates all mixer moves synchronised to TC. \$3895

SRC-VP. Sample Rate Conversion and Vari. Pitch software for DSP \$2995

TimeDil Time Dilation software for DSP, allows dialogue to be naturally "stretched" or "squeezed" w/out pitch change \$2995.

FOGGERS

All prices correct at Dec. 1, 1993, and EXCLUDE sales tax.

ROSCO: from Rosco Australia Pty Ltd 02 906 6262

Rosco fog machines are a component of Rosco Fog Making System which include Rosco Fog Fluid to produce a safe aerosol spray.

1000. 4.7amp power consumption, water base fluid. includes remote control \$750

1500. 4.6amp power consumption, Non toxic water base fluid. Includes remote control \$1300

Omega-XT. 7.2amp power cons. Non toxic water base fluid includes super remote control - will accept DMX or analog interface. \$1500

4500. 12.5amp power. Non toxic water base fluid, includes remote control. \$2500

Chiller. Cools fog to simulate dry ice effect. \$750.

TAS, from Coemar De Sisti Aust 03 467 8666

Fumo Mini. 10amp power cons. water based fluid, \$503.50

Diffusion Fogger DF-50, 2Apower cons, Food grade mineral oil, \$4800

Lightwave Research from Greater Union Village Technologies Aust 07 358 5C22, NZ 09 638 9955

F-100. 1680watts power cons, 'atmospheres; fog juice, high output, quiet, 0-10V control, variable timer, 9.5lt capacity, choice of fluid types, reusable. \$1736

Coldflow. 250ma power, LCO2 exchanger module, clean economical low lying fog production. Use with F-100 \$2915

Smoke Factory: from LSC Electronics 03 561 5255

Scotty: water/glycol fluid, battery operated, radio remote option, \$1525

Captain K: 1500W power cons, water/glycol fluid, portable, cable/radio remote option \$1440

Skywalker: 3000W power cons, water/glycol fluid, twin nozzle, 19in rack mount housing \$1980

Enterprise: 3200W power cons, water/glycol fluid, builtin wireless radio remote, twin nozzle, flightcase, \$3316.50

R2D2: 9000W power cons, water glycol fluid, builtin wireless radio remote, twin nozzle, flightcase. \$4297.

Fan Fogger: 9000W power cons, water/glycol fluid, pump/heat exchanger complete with windmachine, radio remote, flightcase. \$6300.

Buyers Guide Feature Calendar.

Your YEAR ROUND Gear Guide!

Issue:	Feature:	Deadline:
Feb '94	Wireless Microphones, Studio Monitors, Scrollers, colour changers PC Spots	January 15
March '94	Test Equipment, Cables, Connectors Floodlights, Colour medium	February 15
April '94	EQ's, Crossovers, Limiters, Signal Processors, Rigging, Trussing, Flying	March 15
May '94	Effectors, Reverbs, Effects Lighting	April 15
June/July '94	Live Mixing Consoles, Profile Spotlights	May 15
August '94	Studio Mixing Consoles, Moving Lights	July 15
September '94	Microphones, Lighting Control	August 15
October '94	Amplifiers, Dimmers	September 7th
November '94	Speakers, Fresnels	October 15th

* Additional products may be added.

STUDIO LUMINAIRES

All prices correct at Dec. 1, 1993, and EXCLUDE sales tax unless noted.

HOW TO DECYPHER THIS INFORMATION: After product name is lamp type (if given), then wattage, then output at a given distance, then beam spread angle.

Strand: Distributed by Eylecraft Pty Ltd Phone: 03 587 2555

Studio Cyc Lights

Orion Single	p2/12	1250	4550 lux @ 1.2 metres,	Single compartment floor standing cyc light	\$631
Orion 4	p2/12	1250	4550 lux @ 1.2 metres,	4 compartment floor standing cyc light, hinged version also available	\$2379
Iadi Cyc	p2/20	1kW	beam spread: 98°	Compact high powered fill light for small video and TV studio	POA
Iris 1	p2/12	1250	1350 lux @ 3.3 metres,	Single compartment pole op. cyc light. Manual op. version also available	\$1109
Iris 2	p2/12	1250	1350 lux @ 3.3 metres,	2 compartment PO vertical cyc light. Horizontal & split stirrup also available	\$1594
Iris 3	p2/12	1250	1350 lux @ 3.3 metres,	3 compartment pole operated horizontal cyc light	\$2130
Iris 4	p2/12	1250	1350 lux @ 3.3 metres,	4 compartment PO cyc light. Split stirrup also available	\$2250

Studio Floodlights

Iadi fill	p2/20	1kW	440 lux @ 5 metres, beam spread: 98°	compact high powered fill light for small video and TV studio	\$504
Mini Iris	p2/12	1250	1350 @ 3.3 metres,	compact floodlight for cyc lighting and backlighting in small studio	\$480

Studio Fresnels

Mizar	CP82	500	2160 lux @ 5 metres, beam spread: 13°-51°	smallest studio fresnel in the QuartzColor range	\$458
Bambino	1kW CP40	1kW	2500 lux @ 6 metres, beam spread: 12°-63°	compact location fresnel for situations where size is a problem	\$826
Polaris	CP93	1200	2100 lux @ 8 metres, beam spread: 9°-59°	compact PO Fresnel. Manual version also available	\$1276
Bambino	2kW CP41	2kW	1550 lux @ 10 metres, beam spread: 10°-59°	compact PO Fresnel. Manual op also available \$1542	
Castor	CP94	2.5k	1900 lux @ 14 metres, beam spread: 10°-53°	popular compact pole op Fresnel. Also takes 2kw lamp and available as manual	\$1811
Bambino	5kW CP29	5kW	2500 lux @ 16 metres, beam spread: 14°-55°	compact studio and location PO Fresnel. Manual also available	\$1239
Pollux	CP29	5kW	2015 lux @ 17 metres, beam spread: 12°-59°	powerful lightweight PO Fresnel. Manual op also available	\$2332
Vega	CP83	10kW	1950 lux @ 22 metres, beam spread: 10°-49°	high power PO Fresnel for larger TV studios. Manual op also available	\$3293
Draco	20kW	20kW	2000 lux @ 35 metres, beam spread: 23°-46°	high output Fresnel provides intense single source TH illumination	PCA

Softlights

Giano	CP32 & p2/12	2.5 & 5kW	2869 lux @ 4 metres beam spread: 10°-16°	1076 lux @ 6 metres, beam spread: 70°-97°	dual purpose double ended
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Fresnel/Softlight

Arturo	1250	p2/12	1250	1200 lux @ 3 metres, beam spread: 62°-95°	pole operated softlight for small studio. MO also available	\$1427
Arturo	2500	p2/12	2.5k	1030 lux @ 5 metres, beam spread: 64°-99°	dual power PO softlight with twin switchable lamps. Also MO	\$1811
Arturo	5000	p2/12	5k	892 lux @ 7 metres, beam spread: 68°-105°	dual power PO softlight with 2 x 2 switchable lamps.	\$2717
Arturo	575 HMI	HMI	575	900 lux @ 3 metres, beam spread: 53°-89°	HMI double ended softlight with daylight colour temperature	POA
Arturo	1200 HMI	HMI	1200	860 lux @ 5 metres, beam spread: 78°-90°	mid range softlight offering a powerful source of soft daylight fill	POA
Arturo	2500 HMI	HMI	2500	860 lux @ 5 metres, beam spread: 78°-90°	powerful source of daylight illumination	POA

De Sisti: Distributed by Coemar De Sisti Australia 03 467-8666

Fresnels

Magis	CP 81/82/89	300/500/650	3000 lux @ 3 metres, beam spread: 7°-51°		\$575
			4670 lux @ 3 metres, beam spread: 7°-51°		\$575
			8666 lux @ 3 metres, beam spread: 7°-51°		\$575
Leonardc	1K CP 71	1000	1286 lux @ 10 metres, beam spread: 7°-54°	manual and pole operated available	\$980
Leonardc	2K CP 73	2000	3750 lux @ 10 metres, beam spread: 8°-54°	manual and pole operated available	\$1450
Leonardc	5K CP 85	5000	7330 lux @ 10 metres, beam spread: 5°-56°	manual and pole operated available	\$2000
Leonardc	Piccolo 2K CP 73	2000	2420 lux @ 9.15 metres, beam spread: 8.5°-57°	manual and pole operated available	\$1370
Leonardc	Piccolo 5K CP 85	5000	5810 lux @ 9.15 metres, beam spread: 10.5°-54°	manual and pole operated available	\$1780
Leonardc	10K CP 83	10k	6133 lux @ 10 metres, beam spread: 8°-52°	manual and pole operated available	\$2830
Superleo	20K	20k	667 lux @ 20 metres, beam spread: 12°-58°		\$15,880
Michelangelo	dual source	2.5/5k	2.5/5k		\$4800
Leonardo	2.5/5k special	2.5k			\$2,550
Leonardo	1.25/2.5k special	1.25/2.5k			\$2,130

Rembrandt Discharge daylight Fresnels - Pricing on these systems depends on the configuration ie Mechanical or electronic ballast, with or without lamp etc

Raffaello Discharge softlights - Pricing on these systems depends on the configuration ie Mechanical or electronic ballast, with or without lamp etc

Quartz Halogen softlights

Wyeth	1C00	p2/7	1000W	New product	TBA
Wyeth	1C00/2000	p2/7	1000/2000W	New product	TBA
Botticelli	1250/2500	p2/12	1250/2500W		\$1200
Botticelli	2500/2500	p2/12	2500/2500W		\$2060

All available in manual and pole operated versions

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Fax: (02) 517 1045

TIPS

Microphones

Microphone technique is largely a matter of personal taste - whatever sounds right for the particular instrument, musician and song is right. There is no one ideal way to place a microphone. Nor is there one ideal microphone to use on any particular instrument. Choose and place the microphone to get the sound you want. We recommend experimenting with all sorts of microphones and positions until you get your desired sound. However, the desired sound can be achieved more quickly by understanding basic microphone characteristics and sound radiation properties of musical instruments. For example:

- Try to get the sound source (instrument, voice or amplifier) to sound good acoustically ("live") before miking it.
- To determine a good starting microphone position, try closing one ear with your finger. Listen to the sound source with the other ear and move around until you find a spot that sounds good. Put the microphone there.
- Use as few microphones as are necessary to get a good sound. Combine two or more sound sources on one microphone.
- The closer a microphone is to a sound source, the less room acoustics (natural reverberation) and background noises are picked up. Also, the gain before feedback is greater - that is, the microphone can be turned up louder before feedback occurs.
- Place the microphone only as close as necessary. Miking too close can colour the sound source's tonal quality (timbre).
- An omnidirectional microphone will pick up more room acoustics than a unidirectional microphone at the same distance. An "omni" should be placed closer to the sound source than a "uni" - nearly half the distance - to pick up the same balance between direct sound and room acoustics.
- Many unidirectional microphones, such as cardioids, boost the bass progressively as the microphone is placed closer to the sound source. This is called proximity effect. When miking close with unidirectional mics (< 300 mm), be aware of proximity effect and roll off the bass until you obtain a more natural sound.
- When multiple microphones are mixed together (combined to one channel), the distance between mics should be at least 3 times the distance from each microphone to its intended sound source. This will help eliminate phase cancellations.
- Some microphones have off-axis colouration. This is a dull or coloured tone quality resulting from sounds arriving off-axis (from the sides and rear of the mic). Try to keep sound sources as on-axis (in the front) as possible.
- If the playback of your recording sounds distorted even though you did not exceed a normal recording level, the mic signal may be overloading your mixer's input. Correct this by using an in-line attenuator or the input attenuator on your mixer to reduce the mic signal level (From Shure - Microphone Techniques for Music. Contact Jands for a copy).

BG Series



BETA GREEN Microphones

(All Low Z)

BG1.0 CARDIOID VOCAL MIC WITH SWITCH
(Hi/Low Z Switchable)

\$119.00

BG2.0 CARDIOID NEODYMIUM, VOCAL W/SW

\$169.00

BG3.0 CARDIOID NEODYMIUM, VOCAL W/SW

\$249.00

BG4.0 CARDIOID CONDENSER INSTRUMENT MIC W/SW

\$399.00

BG5.0 CARDIOID CONDENSER VOCAL MIC W/SW

\$399.00

T Series Wireless



The standard 100% SHURE wireless system for general use. VHF band range typically 100cm, transmitter battery life typically 14 hours.

TG: Guitar or instrument, with L11 beltpack transmitter, WA300 instrument cable and T6 receiver.

\$695.00

TP: Presenter, with small 839W Lavalier microphone. Suits church and commercial sound applications. Lavalier plugs into L11 beltpack, includes T6 receiver.

\$895.00

TV: Vocalist, with genuine Shure SM-58 microphone (L2/58) and transmitter all in one, with T6 receiver.

\$1,095.00

Following frequencies are ex-stock:
176.2 177.6 186.2 202.2

Beta Series



BETA 57M SUPERCARDIOID NEODYMIUM INSTRUMENT MICROPHONE: Owing its heritage to the world-standard SM57, the BETA 57 offers refinements such as extended low-bass and high frequency response.

\$459.00

BETA 58M SUPERCARDIOID NEODYMIUM VOCAL MICROPHONE: Inspired in design by the legendary SM58 and quickly becoming the new world standard, the premium quality BETA 58 is unequivocally the best dynamic microphone for demanding live vocal applications.

\$499.00

BETA 87 SUPERCARDIOID CONDENSER VOCAL MICROPHONE: The newest member of the acclaimed BETA Series, the BETA 87 is the first electret condenser microphone to join the BETA line. Combines exceptionally smooth, tailored response with a true supercardioid pattern which provides greater gain before feedback.

\$739.00



SM10A-CN: Cardioid head-worn mic-set

\$319.00

SM11-CN: Miniature lapel mic

\$249.00

SM48-LC: Genuine Shure SM58 copy!

\$179.00

SM48-S-LC: Genuine Shure SM58 copy, w/switch

\$179.00

SM57-LC: Cardioid instrument mic

\$249.00

World's No. 1!

SM58-LC: Cardioid vocal mic

\$299.00

SM87-LC: Supercardioid condenser vocal

\$599.00

SM94-LC: Cardioid condenser instrument mic

\$479.00

SM98A: Miniature cardioid studio instrument

\$589.00

SM Pro Condenser Microphones (All low Z)

SM81-LC: Cardioid condenser instrument mic

\$909.00

SM83-CN: Miniature omni studio lapel

\$549.00

SM84: Miniature cardioid studio lapel

\$639.00

General Purpose

55SH Series II: Birdcage classic

\$429.00

520D: Green bullet harmonica mic

\$239.00

SM Series

L Series Wireless

SHURE'S PROFESSIONAL DIVERSITY (dual antenna) SYSTEM: L4 Marcad Diversity receiver offers superior reception, rack mountable case and XLR or jack output.

ELS24/58: Handheld SM58 vocal mic system

\$1745.00

ELS24/87: Handheld SM87 vocal mic system

\$1945.00

ELS24/Beta58: Handheld Beta 58 vocal mic system

\$1995.00

ELS24/Beta87: Handheld Beta 87 vocal mic system

\$2095.00

ELS114: Guitar or instrument system

\$1395.00

ELS114/16: Headworn condenser system

\$1995.00

ELS114/98: Instrument condenser system

\$1895.00

ELS114/839: Lavalier system with 839W mic

\$1545.00

ELS114/83: Lavalier system with WL83 mic

\$1595.00

ELS114/84: Lavalier system with WL84 cardioid mic

\$1645.00

When ordering CHOOSE a frequency to suit, bearing in mind other nearby wireless system users, establish which frequencies are already in use. The frequencies listed below should not clash with major TV stations in Australia. Other frequencies are available - contact Jands for further information. Available stock frequencies:- 174.500 176.200 177.600 186.200 190.600 202.200 203.000



L4 Marcad Diversity Receiver

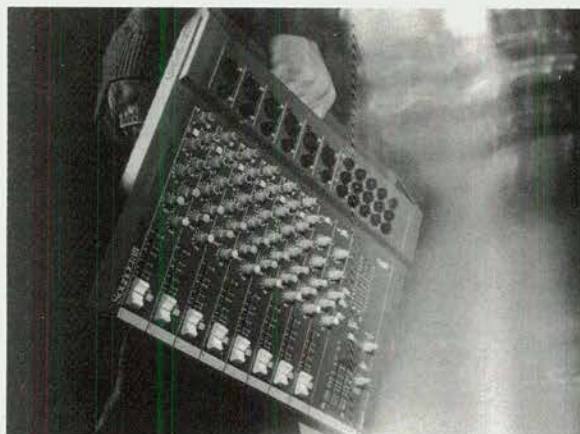


L11 Body-Pack



Wireless Systems

Just like radio stations, wireless microphones operate on specific frequencies. Most keep within the region between 160MHz and 216MHz. This region, sometimes called "high band VHF", is the same one in which VHF TV is broadcast. It is important to consider stations in your area before buying a wireless system, so that you will not encounter interference from a nearby TV station's broadcast. Consult Jands for further information. When using a wireless microphone system, try to keep the distance from the transmitter to the receiver under 100 feet (under 50 feet if the signal must travel around corners or through doorways to the receiver). Experiment with antennae placement to find a spot where dropouts don't pose a problem; you may find it easier to simply control the movement of the person wearing the transmitter. When using beltpack type transmitters, be sure that the cable is hanging straight. If it's coiled up in the wearer's pocket, transmission distance will be significantly reduced. (From Shure: Guide to Better Audio. Contact Jands for a copy).



FOLIO 10/2: New ultra portable compact console with 6 mono microphone channels, each with gain control, 3 band EQ with swept mid, hi-pass filter, 2 AUX sends, pan control and 60mm linear fader. Two stereo input channels each with 2 band EQ, AUX sends, pan control, fader and switchable input gain +4/-10dB are also provided. All this **and** performance: 108dB dynamic range!

Phantom power for condenser mics, PFL solo buttons, 2 AUX sends, separate monitor outs, stereo inserts across the mix-outs for graphics etc, stereo tape returns and oscillator for level matching.

FOLIO 10 CHANNEL

(6 mic. inputs and 2 stereo input channels)

FOLIO 12 CHANNEL

(8 mic. inputs and 2 stereo input channels)

FOLIO 12 RACKMOUNT

(8 mic. inputs and 2 stereo input channels)

~~\$1495.00~~
\$1795.00
\$1795.00

FOLIO SPECIAL
 10 ch. was \$1,495
 Now **\$1,195**

Folio

Folio 4

FOLIO 4: Live mixing console, building on the highly successful Folio. This console provides professional front-of-house mixing facilities at an amazingly low price, with 12 mono and 4 stereo input channels, true 4 buss discrete sub-groups, routable to mix, 8 AUX sends and all the facilities required to provide a professional mix. The Folio 4 is provided in a 20/4/2 format, with 12 mono input channels each featuring a mic/line input, phantom supply switch, gain control, insert points, 3 band EQ with swept mid, hi-pass filter, 8 AUX sends, group routing, PFL solo switch and peak LED. Four stereo channels are also provided with similar facilities as the mono channels but with 2 band EQ and switchable input gain (+4/-10dB). 2 stereo send and returns, subgroup AUX control, dual LED "look and listen" flexible multiple metering, oscillator, XLR mix outs, stereo tape send and return, stereo monitor outs, latching 4 pin XLR power supply are just some of the other features of this console.



\$3995.00

TIPS

PA Mix

Set up the backing vocal mics and check that there is no feedback problem when both the backing vocal and lead vocal mics are on. If there is, reduce the master gain setting slightly until the feedback stops. If feedback is a real problem, consider moving the main PA speakers forward a little.

Now the instrument mics and direct line inputs can be balanced relative to the vocals.

Finally, test out any effects units connected to the system and establish the correct balance of dry and effected sound.

Avoid excess use of EQ as this can encourage feedback and may also spoil the basic character of the sound. Consider it an aid to fine tuning rather than a means of making radical changes. It is also recommended to use the high pass filter wherever possible, except on low frequency sources such as bass guitar and drums.

The use of stage monitoring can also worsen the feedback situation so run these at the lowest volume the performers can comfortably work with (from Spirit Folio Applications Guide. Contact Jands for a copy).



FOLIO SI: Primarily a keyboard mixer but suitable for anyone using stereo sources. Specifications are as per the Folio 12/2 but with 8 stereo channels and 2 mono mic/line switchable inputs, giving a total of 18 inputs. Fixed 3 band EQ on stereo inputs with swept mid on mono inputs. Latching PFL solo buttons, available either as flat-bed desktop mixer or in a 7RU rackmount format.

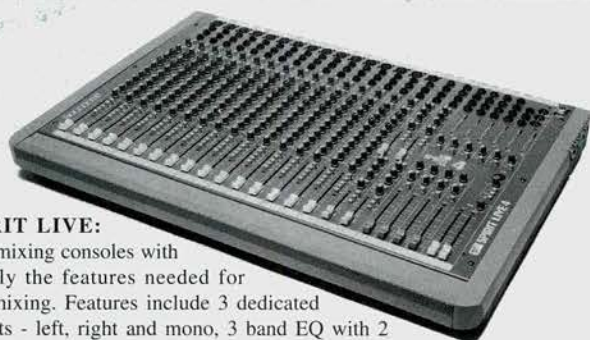
\$1795.00

FOLIO PORTAPOWERS: Battery pack connector which enables any Folio, except Folio 4, to be run from 11-18V DC battery source, eg: a car battery.

\$445.00

Folio Si

Spirit Live/Live 4



SPIRIT LIVE:

Live mixing consoles with exactly the features needed for live mixing. Features include 3 dedicated outputs - left, right and mono, 3 band EQ with 2 sweepable ranges to equalise any frequency between 40Hz and 8kHz with additional high frequency control. 100Hz high pass filter provided. Global switched phantom supply. Available in 8/3, 16/3 or 24/3 format, (3 as opposed to 2 so the extra buss can feed an extra loudspeaker cluster). 3 band EQ with swept mid and low. 4 AUX sends, 2 pre-EQ and 2 post-EQ. An 8 ch. expander can be added to the 8 or 16 input consoles.

- LIVE 8/3 - 8 CHANNEL **\$2,695.00**
- LIVE 16/3 - 16 CHANNEL **\$4,495.00**
- LIVE 24/3 - 24 CHANNEL **\$6,995.00**
- LIVE 8/3 OR 16/3 - 8 CH. EXPANDER **\$2,495.00**

SPIRIT LIVE 4: Live mixing desk with mono and stereo inputs and 4 subgroups. 3 band EQ with swept mid and low. 5 AUX sends, 2 pre-EQ and 3 post-EQ. Global switched phantom supply. Available in 12+2/4/2 (12 mono + 2 stereo inputs = 14 channels), 16+4/4/2, 24+4/4/2 and 32+4/4/2 format. 8 ch. expander available for the 8 or 16 input sizes.

- LIVE 4 - 14 CHANNEL **\$4,995.00**
- LIVE 4 - 20 CHANNEL **\$7,495.00**
- LIVE 4 - 28 CHANNEL **~~\$9,995.00~~**
- LIVE 4 - 36 CHANNEL **\$12,495.00**
- LIVE 4 - 8 CH. EXPANDER **\$2,695.00**

SPIRIT SPECIAL
28 ch. was \$9,995
Now **\$7,995**



SPIRIT STUDIO: In-line studio desk with 8 sub-groups available in 16/8/2, 24/8/2, and 32/8/2 format. 4-band EQ with swept hi-mid and low-mid. 6 AUX sends, 2 pre-EQ and 4 post-EQ. Individual phantom switches. Powerful channel routing flexibility and switching between monitor and channel paths. Spirit Studio's monitor inputs can be used as additional line sources doubling input capacity at mixdown. Including the stereo returns this turns a 32 channel Spirit Studio into a 72 input console when needed.

- SPIRIT STUDIO 16/8 **\$8,495.00**
- SPIRIT STUDIO 24/8 **\$11,995.00**
- SPIRIT STUDIO 32/8 **\$15,995.00**

SPIRIT AUTO: Similar to Spirit Studio and available in same frame sizes but suitable for use with Steinberg Software Automation (Atari or Mac) of channel faders, channel mutes, all 8 groups, (soft group control only), monitor mutes, snapshot button MIDI ports. Software is optional.

- SPIRIT AUTO 16/8 **\$12,995.00**
- SPIRIT AUTO 24/8 **\$18,495.00**
- SPIRIT AUTO 32/8 **\$22,995.00**

Spirit Studio/Auto

TIPS EQ Settings

Bass Drums: Add punch by adding low boost combined with a degree of mid-cut at 250-300Hz. This will produce a solid, powerful sound without boxy overtones. Add attack to the sound by adding a little high boost.

Snare Drums: Can be treated as bass drum or add upper mid boost at 6kHz to produce a crisper sound. Try excessive boost at around 1kHz for a 'Techno' sound.

Acoustic Guitar: Apply a little cut at 250Hz to subdue any boominess or use low cut to produce a thinner sound if it is part of a complex mix. A little high boost will produce a brighter sound, as will a little upper mid boost at between 4kHz and 6kHz.

Vocals: Always use as little EQ as possible; this helps maintain a natural sound and is less likely to provoke feedback in a live situation. If adjustment is necessary, try subtle amounts of cut or boost using the high and low controls and avoid using the mid control if at all possible. Mic popping can't be effectively removed using EQ but can be avoided by using a simple mesh pop shield between the singer and the mic.

Electric Guitar: Use the sweep mid control to add bite at between 3kHz and 6kHz depending on the guitar. A little low cut can be used to thin out a sound that is too muddy (from Spirit Folio Applications Guide - contact Jands for a copy).

Spirit Monitor



SPIRIT MONITOR: Dedicated monitor console, available in 16/8/1 or 24/8/1 formats, 8 monitor sends (with LEDs and swept hi-pass filters) for up to 8 monitor mixes, plus sep. engineer monitoring, 3-band EQ with swept mid and low. Each of the 8 sends has a DIM switch - just hit the switch to quickly find any output feeding back! The need for complicated post-EQ monitoring networks is also removed - just insert your EQ and even compressor/limiter if desired, then you can monitor output signal AFTER your EQ, or use PFL buttons to monitor any channel through the 'wedge' output.

- SPIRIT MONITOR 16/8/1 **\$6,495.00**
- SPIRIT MONITOR 24/8/1 **\$8,495.00**

JBL M Series



JBL M644EX: 4 noise gates in one rack space with each gate having threshold, attack, release and attenuation controls. External key inputs on each channel allows gate triggering from external sources.

\$1,095.00

JBL M712EX: Stereo or dual channel compressor limiter with gate in one rack space. XLR and jack connectors, stereo link, threshold, attack, release and attenuation controls. Gate function with independent threshold control for each channel. 8 LEDs for metering.

\$1,095.00



JBL M552EX: 2 way stereo/3 way mono crossover with variable frequency adjustment, with gain boost and mute on each output. XLR and jack connectors, 24dB Linkwitz-Riley filters, sub-sonic filters. Internally switchable horn EQ.

\$1,095.00

JBL M553EX: 3 way stereo/4 way mono variable crossover frequency adjustment, with gain boost and mute on each output. XLR and jack connectors, constant directivity horn, pre-emphasis, 24dB Linkwitz-Riley filters, sub-sonic filters.

\$1,295.00

Rane Graphic Equalizers



RANE ME 15 DUAL 2/3 OCTAVE AND ME 30 1/3 OCTAVE MICROGRAPHIC EQUALIZERS:

- Constant-Q filters for precise feedback control and minimum interaction.
- Precisely calibrated 20mm sliders with switchable $\pm 12\text{dB}$ or $\pm 6\text{dB}$ boost/cut. Built-in infrasonic, subsonic and RFI filters and overload, signal, bypass and range LEDs.
- Auto balanced/unbalanced/floating 1/4" TRS inputs and outputs.

RANE ME15 **\$1,295.00**

RANE ME30 **\$1,295.00**



ME 60 DUAL 1/3-OCT MICROGRAPHIC EQUALIZER:

- 2 independent channels of 1/3-octave constant-Q equalisation high-pass filters and overall level control for each channel.
- Built-in RFI filters, passive bypass switch, and bypass and overload LEDs.
- Balanced 3-pin and 1/4" TRS and unbalanced RCA connectors on all inputs/outputs.

\$2,095.00

Now acoustic instruments can at last share the forefront along with electric instruments live on stage, with full acoustic timbre, powerful volume, sustain, and minimum feedback.



RANE MAP 33 MIDI/PROGRAMMABLE ACOUSTIC INSTRUMENT PROCESSOR:

Three instrument inputs: Each accepts two (2) pickups: piezo and internal mic, magnetic and mic, piezo and magnetic, two (2) magnetic, etc.

Built-in switchable phantom power: For internally mounted electret mic.

Separate processing for each pickup: Sweepable notch filter, 7-band EQ, invert switch, low filter, balance, pan and level controls for each pickup.

Vocal mic and stereo line inputs: For solo stage operation with cassette/drum machine.

64 memories, full MIDI: On-line help, RC6 remote control, foot controllable and lots, lots more. Call for a brochure.

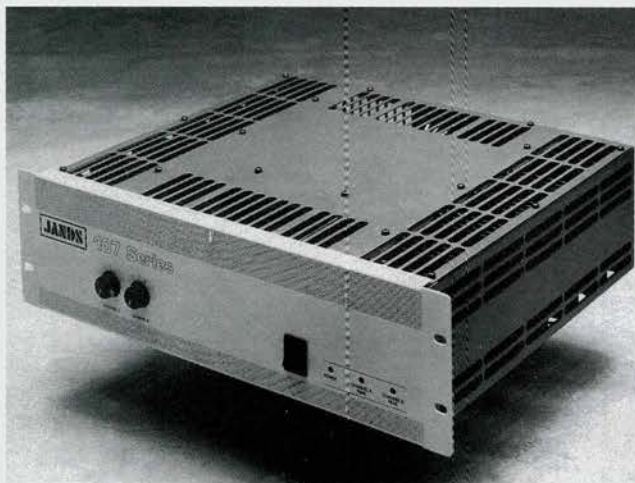


\$6,495.00



Active Crossover

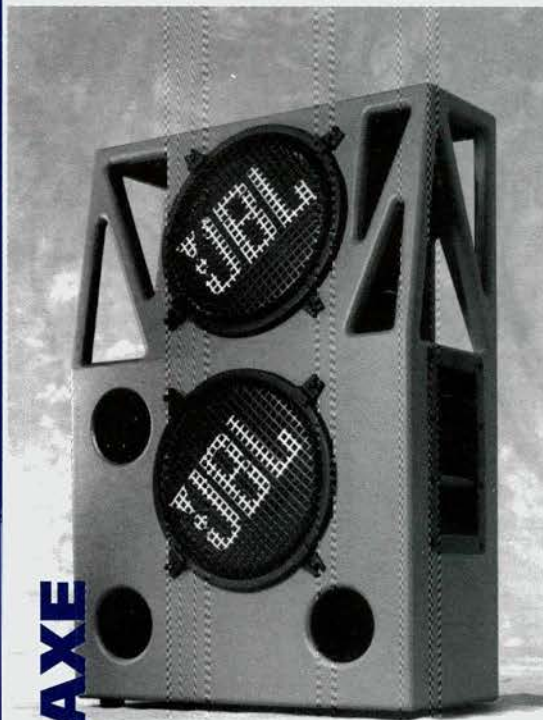
Try to choose a crossover with balanced inputs and using XLR connectors for input and outputs. 24dB filters are the acceptable standard today. Gain boost is useful where there is a need to match a different amplifier input sensitivity on different outputs, ie: the low frequency output feeds an amplifier needing 1.2V input, while the midrange amplifier may need 0.775V input. The only way to accurately match these is via a variable output gain control.



JANDS 107/104 MkII AMPLIFIERS: High quality medium power amplifiers designed for touring and contracting applications. These amplifiers are quiet, being convection cooled and so are ideal for applications where they are located within the listening area. Facilities provided include bridge/parallel mode switches on the rear panel, power and clip LEDs on the front panel and volume controls. Power output 340W + 340W (107), 200W + 200W (104) both channels driven into 4 ohms RMS. T.H.D. is typically less than 0.01%. Call for a brochure.

JANDS 107 MkII **\$1,995.00**

JANDS 104 MkII **\$1,495.00**



THE AXE

SPECIFICATIONS: 4 ohms, 500W RMS power handling, 83Hz resonant frequency. Size 355mm high, 600mm wide, 260mm deep. Weight 40kg.

THE AXE \$1,495.00

AXE:

The professional's choice...The AXE is an innovative twin 12" ported guitar cabinet that will satisfy the most demanding musician, delivering high quality, high level reinforcement. The AXE is loaded with two 12" JBL M121-8 drivers that are able to handle up to 300 watts each. When the two are combined in the AXE box, you are talking an effective 500+ watts RMS. If the requirement is for clean sound, great looks and portability the AXE is the choice.

TIPS

Speaker Power

- For carefully monitored applications where peak transient capability must be maintained, a system should be powered with an amplifier capable of delivering twice its rating. For example, a studio monitor rated at 300 watts can be safely driven by an amplifier capable of 600 watts output. Careful monitoring is the key here. High quality music production today demands high peak factors in the recorded signal. Such peak signals are normally of such short duration that they hardly stress the system's components. Thus, the extra -3dB margin (times two) of power will result in clearer overall operation of the system, with less listening fatigue.
- For routine applications where high continuous but non-distorted output is likely to be encountered, a system should be powered with an amplifier capable of delivering the rating of the system. This case describes the bulk of sound reinforcement activities. Such systems can often be inadvertently overdriven or can go into feedback. When powered with an amplifier equal to their rating, the user is guaranteed of safe operation.
- For musical instrument application where distorted (overdriven) output may be a musical requirement, the system should be powered with an amplifier capable of delivering only one-half of the rating for the system. Much rock music is produced at full output with the amplifier well into clipping, and this is a matter of musical choice (but this only usually true for guitar players).

JBL's musical instrument loudspeakers are tested and rated the same way that other transducers are. However, recognising that amplifier distortion is a valid musical tool, we recommend that a musical instrument loudspeaker be powered with an amplifier of one-half the loudspeaker's sine wave rating. The reason for this is as follows:-

When an amplifier is driven into hard clipping it produces virtual square waves at its output. An amplifier rated at, say, 100 watts for sine wave output will produce a 200 watt square wave. And it can do this pretty much on a continuous basis as long as it can be adequately cooled. Since the crest factor of a square wave is 0dB, the full 200 watts would be delivered to the loudspeaker on a continuous basis. As a typical example, let us assume that a guitar player has two E130 loudspeakers (these days two JBL E120s or two M121-8 as per the AXE box would be more usual). The sine wave rating for a single E130 is 150 watts and for the pair used in a system, the sine wave rating would be 300 watts. We would recommend that the pair be driven with a 150 watt amplifier, realising that the amplifier could produce continuous output of 300 watts when driven into clipped output (for more detailed discussion of these topics, see JBL Technical Notes, Volume 1, Number 16. Call Jands for a copy).



Control 8SR

Control 5+

THE JBL CONTROL SERIES: All offer the quality and punch of true JBL monitors. When more low end response is needed there are 2 sub-woofers: Control SB1 and Control SB5.

The Control 1 is available in many variations, ceiling mount (1CM), built-in line transformer (1AT) and weatherproof (1AW). Applications where a larger, more powerful system is required the Control 5 and Control 5+ offer the same versatility as the Control 1, but with larger bass drivers for broader frequency response and higher output. And like the Control 1 range, the Control 5s are magnetically shielded which means these can be used next to video monitors.

The Control 8SR (signifying Sound Reinforcement), the larger Control 10 and 12SR are designed for a higher level of performance in sound reinforcement applications. The Control 8SRs are ideal for those situations when cabinet size must be small but the sound must be BIG. The performance from these diminutive cabinets is extraordinary and these loudspeakers are a must for medium size PA applications. The Control 10, a front loaded 3 way enclosure, and the Control 12SR, a 2 way loudspeaker with horn, are best suited for schools, theatres and other applications where cabinet size is not an issue and where power and performance is required.

CONTROL MONITORS (sold in pairs):

- CONTROL 1: 125mm woofer/2 way **\$595.00**
- CONTROL 1 PLUS: 125mm woofer/2 way high performance **\$795.00**
- CONTROL 1E/230: Control 1 with built-in amp. **\$1,345.00**
- CONTROL 5: 165mm woofer/2 way **\$895.00**
- CONTROL 5 PLUS: 200mm woofer/2 way high performance **\$1,095.00**
- CONTROL 8SR: 200mm woofer/2 way **\$1,695.00**
- CONTROL 10: 300mm woofer/3 way **\$3,495.00**
- CONTROL 12SR: 300mm woofer + horn/2 way **\$4,295.00**



Control1

SB1

CONTROL SUBWOOFERS (sold individually):

- CONTROL SB1: subwoofer for Control 1 **\$645.00**
- CONTROL SB5: Subwoofer for Control 5 **\$845.00**

CONTROL MOUNTING ACCESORIES (sold in pairs):

- MTC-2+ Adjustable ceiling/call count for Control 1 \$265.00
- MTC-3+ Clamp mount for Control 1 \$415.00
- MTC-8 Fixed call bracket for Control 1 \$65.00
- MTC-9 Tripod counting kit \$205.00
- MTC-51 Ball joint wall mount for Control 5 \$410.00
- MTC-52 Ball joint ceiling mount for Control 5 \$425.00
- MTC-53 Rack mount kit for 1 Control 5 \$115.00 (sold individually)
- MTC-56 Flush fixed wall mount for Control 5 \$50.00
- MTC-101 Tripod mount for Control 10/12 \$155.00
- MTC-102 Wall mounting bracket for Control 10/12 \$610.00
- MTC-103 Ball joint ceiling mount for Control 10/12 \$600.00
- MTC-106 Padded protective covers for Control 10/12 \$465.00
- MT-4612 Tripod stand to suit Control 10 / 12 SR \$415.00 (sold individually)



4206

4208

Studio Monitors

JBL 4200 SERIES NEAR-FIELD STUDIO MONITORS: Not long ago, small speakers placed atop the mixing console were largely chosen for one thing: the "smallness" of their sound, their ability to duplicate the performance of the average home or car stereo. With the advent of quality home hi-fi and automotive audio systems, recording engineers now require the complete opposite. Enter the JBL 4200 series of near-field monitors.

Designed from the ground-up as genuine monitors and not some spin-off from a domestic design, these speakers are equally at ease in complex multi-function music recording studios, film and video post-production houses, radio stations or 4-track set-ups in a bedroom or a garage. The JBL 4206 monitors feature a 165mm bass driver, have a frequency response of 65Hz to 20kHz (± 2 dB) and a continuous power handling capacity of 75 watts (300 watts peak). The JBL 4208s feature a 200mm bass driver, a response spanning 60Hz to 20kHz and a similar power handling capacity as the 4206s.

- JBL 4206 MONITORS **\$995.00** (per pair)
- JBL 4208 MONITORS **\$1,295.00** (per pair)



MR825



MR802

MR SERIES LOUDSPEAKER SYSTEMS: A new standard of performance. Ready for use, complete with all hardware, corners, carry handles, and internal crossover network. High frequency adjustment on all 2 way/3 way models. Durable and reliable, with new low frequency transducers with large magnets and voice-coil assemblies. Time aligned Flat-Front Bi-Radial™ horns accurately reproduce highs and provide a wide controlled beam pattern, minimising the number of speakers required. Manufactured using ESB, a high strength material produced from Aspen, a tree that quickly regenerates and can be commercially cultivated.

MR Series

- MR802: 300mm woofer 2 way - f/back wedge **\$1,495.00**
- MR805: 380mm woofer 2 way - f/back wedge **\$1,695.00**
- MR812: 300mm woofer - Guitar **\$795.00**
- MR815: 380mm woofer - Bass Guitar **\$895.00**
- MR818: 460mm woofer - M.I. Sub-bass **\$1,695.00**
- MR822: 300mm woofer 2 way - PA **\$1,495.00**
- MR825: 380mm woofer 2 way - PA **\$1,695.00**
- MR826: 380mm woofer 2 way horn loaded - PA **\$2,195.00**
- MR835: 380mm woofer 200mm mid + horn 3 way - PA **\$2,095.00**
- MR838: 460mm woofer 250mm mid + horn 3 way - PA **\$2,395.00**

Control Series

4PAK Portable Dimmer



JANDS 4PAK DIMMER: Up to now a lot of equipment has been required for even a simple lighting system. The Jands 4Pak changes all this by integrating the control desk, dimmers and interconnecting cables into a single, economical 4 channel unit. Now a powerful lighting display can be up and running in the time it takes to hang the lights and plug their leads into the 4Pak.

The 4Pak is rated for a total load of 2400 watts, however this load does not need to be spread across the four channels as each channel is capable of handling the full 2400 watts without overloading or generating audio interference. The control section of the 4Pak provides many facilities normally only found in much larger units.

The 4Pak is suitable for use in a variety of situations including lighting for schools, bands and theatre groups, chase controls for mobile disco operators and the control of shop window or trade show displays.

JANDS 4PAK 4 CHANNEL CONTROLLER/DIMMER

\$895.00



Par 64

Par56

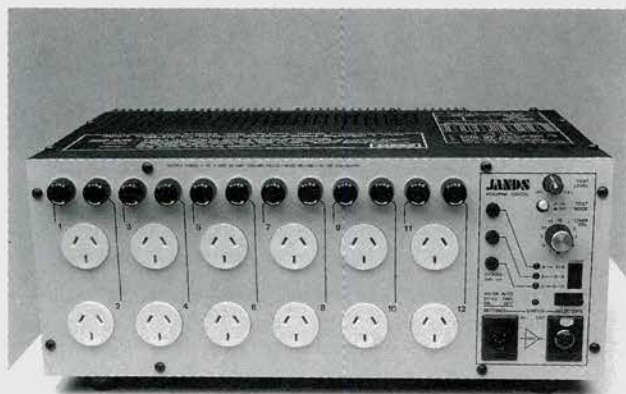
PAR 56/64: The Jands range of Par cans are available for use with Par 56 300W lamps or Par 64 1000W lamps. Par 56 cans are available in steel or spun aluminium and are ideal for use in schools, clubs, theatres, trade shows, store displays etc.

Par 64 cans are available in spun aluminium and are suitable for professional applications such as concerts, theatre and studios. Robust and reliable, these cans feature quick release colour frames, reinforced construction, safety mesh (64 only) and heavy duty yokes.

Par 56/64

- PAR 56: Steel **\$89.00**
- PAR 56: Aluminium Black **\$99.00**
- PAR 56: Silver finish **\$114.00**
- PAR 64: Aluminium Black **\$109.00**
- PAR 64: Silver finish **\$119.00**
- PAR 56 GLOBE: 240V 300W **\$65.00**
- PAR 64 GLOBE: 110V 1000W **\$105.00**

Roadpak Digital



JANDS ROADPAK DIGITAL: The Roadpak digital is a 12 channel dimmer unit capable of controlling up to 2.4kW per channel. This unit is intended for use with most commercial lighting consoles featuring DMX-512 output such as the Jands Stage 12/24, ESP II and Event range of consoles.

The Roadpak is suitable for use in a wide variety of applications including touring lighting rigs, theatre, studios, auditoriums and other areas requiring precise control of lighting levels. The Roadpak features Triac/Ferrodip™ choke assemblies providing smooth fading outputs with low noise characteristics. The dimmer curves are set for a linear input/output voltage power relationship, a curve which is suitable for most lamps in common use. Features include test on/off switch, test level control and channel selector, indicator LEDs for 3 phase mains status, output mimic and control protocol. DMX assign switches are also provided.

JANDS ROADPAK DIGITAL 12 CHANNEL DIMMER RACK

\$2,995.00



Stage 12/24

STAGE 12/24-12/24 CHANNEL LIGHTING CONTROL CONSOLES: The Stage range of lighting control consoles has been designed to meet the needs of modern performance spaces. These consoles are packed with features such as industry standard DMX-512 outputs, wide mode (doubles the number of control channels), channel and master flash buttons, add/solo selector, chaser functions, audio chase trigger and grab faders for phantom 3rd + 4th preset. Call and ask for a brochure.

The USITT (1990) DMX-512 control protocol, the communications standard supported by all leading manufacturers of lighting equipment; enables consoles and dimming systems to be linked together by means of a common data path. This compatibility ensures that a lighting system can be expanded without increasing the amount of control cabling, as is the case when an analogue system is upgraded.

JANDS STAGE 12 CONSOLE

\$1,195.00

JANDS STAGE 24 CONSOLE

\$1,695.00

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AXE



Bob Spencer From The Temple Gods

The AXE is an innovative twin 12" ported guitar cabinet that will satisfy the most demanding musician, delivering high quality, high level reinforcement.

The AXE is loaded with two 12" JBL M121-8 drivers that are able to handle up to 300 watts RMS each. When the two are combined in the AXE box, you are talking an effective 500+ watts RMS.

The AXE has a clean sound, great looks and portability on its side, with clarity and depth being its outstanding features.

Built to withstand the rigours of life with muso's and roadies, the AXE will fit in the back of your car. Dense metal mesh provides heavy duty protection for the speaker cones and struts across the top will help you get the box in and out of tight spots. There's a choice of inputs too: the traditional guitar jack and NL 4MP Speakon connector.

If you're after a rig that's tough, loud and clear - especially if you're into using effects - the box you need is the AXE.

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JANDS

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Jands Electronics Pty Ltd.

578 Princess Highway, St. Peters, NSW 2044.

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Fax: (02) 517 1045

Focusable discharge

Tiziano 2000W portable kit 200WMSR, Tiziano 2500W system, 2500 MSR, Available in a range of configurations
Caravaggio 575W system Par 64, 575 HMI Par 64; Caravaggio 1200W system Par 64, 1200 HMI Par 64
Remington 2500/4000W system, 2500 or 4000W, MSR/HMI

Pricing on these systems depends on the configuration ie: Mechanical or electronic ballast, with or without lamp etc

Cyclorama/groundrow

Giotto 1 p2/12 1250W	Cyclorma luminaire available in manual and pole operated	\$455
Duccio 1 p2/12 1250W	Groundrow	\$496

Both these units are totally modular and can be arranged in various configuration

ARI - Distributor: John Barry Group 02 439 6955 Wayne Riltchie

Junior 300	CP/81	300	400lux @ 3 metres, beam spread: 62°	also accepts 500w cd/82 globe	\$725
Junior 650	CP/89	650	670lux @ 4 metres, beam spread: 60°		\$775
Junior 1000	CP/71	1K	680lux @ 5 metres, beam spread: 60°		\$1170
Junior 2000	CP/73	2K	560lux @ 7 metres, beam spread: 60°		\$1465
Junior 5000	C8/85	5K	610lux @ 12 metres, beam spread: 55°		\$2120
Studio 1000	CP/71	1K	700lux @ 5 metres, beam spread: 62°	Pole operated or manual version available	\$1220
Studio 2000	CP/73	2K	1020lux @ 7 metres, beam spread: 56°	Pole operated or manual version available	\$1860
Studio 5000	CP/85	5K	690lux @ 12 metres, beam spread: 60°	Pole operated or manual version available	\$2290
Softlight 2500	2xp2/12	2.5K	688lux @ 4 metres,	Pole operated or manual version available	\$1790
Softlight 5000	4xp2/12	5K	840lux @ 5 metres,	Pole operated or manual version available	\$2550
Attilite 650	DYR	650	788lux @ 4 metres, beam spread: 62°		\$655
Attilite 800	DXX	800	383lux @ 4 metres, beam spread: 62°		\$630
Attilite 2000	FEX	2K	680lux @ 5 metres, beam spread: 75°		\$895
Mini-flood 1000	p2/20	1K	590lux @ 4 metres, beam spread: V=65° H= 99°		\$410

FOLLOW SPOTS

All prices correct at Dec. 1, 1993, and EXCLUDE sales tax unless noted.

Selecon. Distributor: Herkes 02 319 3133

Chorus. Lamp: T29, 1200watts. 1000 lux@ 16 metres, beam spread: 8° - 16° zoom, 4 colour external changer incl, size 1030mm x 214mm, stand incl, iris and cleaning docs incl. \$506

Performer Quartz. Lamp: CP91, 2500 watts, 1000 lux@ 22 metres, beam spread: 8° - 14° zoom, 6 colour external changer incl, 1170mm x 375mm size, stand incl, fader, iris fan cooled adjustable balance. \$2580

Performer MSR. Lamp: MSR 1200, 1200w. 1000 lux @ 57 metres, beam spread: 5.5° - 9° zoom, 6 colour external changer, size: 1170mm x 375mm. Stand incl, fader, iris cutter, fan cooled AD3 balance hour meter, half power mode \$5130

Performer MSR short throw. Lamp: MSR 1200, 1200w, 1000 lux@ 38 metres, beam spread 10° - 15° zoom, 6 colour external changer, size: 1050mm x 375mm, stand incl, fader, iris cutter, fan cooled AD3 balance hour meter, half power mode. \$6130.

Coemar. Distributor: Coemar de Sisti Aust 03 467 8666

Testa 1000/1200. Lamp CP71/CP93, 1000/1000w, 1960 lux@ 15 metres, beam spread 7° - 13° optional 5 colour external changer, 165 x 165mm \$2175.

Testa 2000. Lamp CP72, 2000w, 2830 lux@ 15 metres, beam spread: 5.5° - 12° Optional 5 colour external changer. 165 x 165mm, mechanical dimmer incorporated. \$2720.

Testa 575 MSR. MSR575 lamp, 575w. 2020 lux@ 15 metres, beam spread: 7° - 13° Optional 5 colour external changer, 165 x 165mm. Mechanical dimmer incorporated. \$3281.

Testa 1200 MSR. Lamp: MSR1200, 1200w. 1500 lux@ 30 metres, beam spread: 6° - 11.5° Optional 5 colour external chnager. 165 x 165mm. Mechanical dimmer incorporated \$4250.

Testa 2500 MSF. MSR2500, 2500w lamp, 3730 lux@ 30 metres, beam spread: 7° - 13.5° Optional 4 colour external colour changer. 245 x 245mm. Dimming shutter optional extra \$8145.

TAS. Distributor: Coemar de Sisti Aust 03 467 8666

Inse 1000. 1000w, 770 lux@ 15 metres, beam spread: 8° - 22° Optional 4 colour external colour changer. 165x 165mm. \$908

Inse 1200 MSR. MSR1200, 1200w, 1490 lux@ 20 metres, beam spread: 8° - 22° Optional 4

colour external changer. 165x 165mm, dimming shutter optional extra. \$1956.

Strand. Distributor: Bytecraft Pty Ltd 03 587 2555

Cantata. Lamp RSE29, 1.2k. 1150 lux@ 15 metres, beam spread: 11° - 26° 4 colour external changer incl. 880mm x 340mm x 395mm. Lamp included. For smaller venues \$1598.

Solo 2k. CP79 amp, 2k. 1625 lux@ 20 metres, beam spread: 9° - 15° Optional 6 colour external changer. 1065mm x 460mm x 480mm. Lamp included, horizontal strip shutters, aiming signts. \$2664.

PANI. Distributor: Bytecraft Pty Ltd 03 537 2555

HMV 1202/20. HMI 1200w. 2000 lux@ 17 metres, beam spread: 12.6° Optional 6 colour external changer. 630mm x 630mm x 560mm. Lamp included, beam shaping shutters \$9200.

HMV 1202/35. HMI 1200w 2000 lux@ 30 metres, beam spread: 7.4° Optional 6 colour external changer. 630mm x 630mm x 560mm. Lamp included, beam shaping shutters \$9500.

HMV 2500. CID 2500w. Beam spread: 6° to 16° Optional 6 colour external changer. Lamp included, beam shaping shutters \$24,500.

CCT Lighting. Distributor: Rosco Australia 02 906 6262

Silhouette discharge ZOOJS110. MSR 1200w. 3,000,000 candelas, beam spread: 11° - 20° zoom. Optional 6 colour external changer. 1300 x 450 x 450. Built in dimmer and reduced power switch and rotating stripping shutters, will accept 1-2k HMI, 1 KCSI, 1KWCID as alternative lamps. \$6795.

Model Z0607FS. Minuetta Pursuit. Lamp: T27. 650w 216,000 candelas, beam spread: 6° - 10° zoom. 808 x 292 x 314. Includes shutters optional colour changer. \$1370

Silhouette Z30TY17. T29 lamp, 1200w. 305,700 candelas, beam spread 1° - 26° zoom. 760 x 400 x 370. Includes shutters optional colour changer. \$1475.

Silhouette Z00DY17. CP91 lamp 2500w. 393,600 candelas, beam spread: 11° - 26°. 850 x 525 x 370. Includes shutters, optional colour changer. \$2090

Silhouette Z30CY17. CP91 lamp 2500w 753,000 candelas, beam spread: 6° - 21°. 980 x 535 x 370. Includes shutters optional colour changer. \$2560.

(continued)

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Followspots (continued)

Lycian: Distributor: Jands Electronics Pty Ltd 02 516 3622

1236 Clubspot. FLE 360 lamp, 6 colour internal changer, 800 x 200, stand included. \$2061.

1266. HTI 400, 400w lamp, 3,800 lux @ 30 metres, beam spread: variable. 6 colour internal changer. 900 x 400. Stand included. Short/medium throw. \$16,000.

1267. HTI 400, 400w lamp, 4000 lux @ 60 metres, beam spread: variable. 6 colour internal changer. 1200 x 400. stand included long throw \$16,000.

1272. MSR/HR, 1200w, 2000 lux @ 30 metres, beam spread: variable. 6 colour internal changer. 1100 x 400 size. Stand incl, hot restrike, \$17,000.

1275. HMI 1200w, 5000 lux @ 50 metres, beam spread: variable. 6 colour internal changer. 1450 x 300 size. Stand incl, hot restrike. \$7,500.

1278. MSR 2500w lamp, 2000 lux @ 100 metres, beam spread: variable. 6 colour internal changer. 1850 x 800 size. Stand incl, hot restrike \$25,000.

Prolite: from Prolite Manufacturing. (Made in Australia) 076 327 312

PR12-FS/1200. F29 1200w lamp, Beam spread: Max 14°. 5 colour internal changer 390mm long, stand incl., no lamp \$1220.

PR12-FS/2000. CP72 2000w lamp, Beam spread: Max 14°. 5 colour internal changer 350mm long. Stand incl., no lamp \$1410.

PR12-FS/17SR. MSR 1200, 1200w lamp. Beam spread: Max 14°. 5 colour internal changer. 350mm long. Stand incl., lamp included. Available February \$3895

Powered Mixers

All prices correct at Dec. 1, 1993, and include sales tax unless noted.

PHONIC: CMC Music Pty Ltd 905 2511

PMD-800 Stereo powered mixer, 2 x 200 watts, 8 channels (channels 7 & 8 stereo) reverb, 2 Aux sends, 3 band EQ, 2 limiters, master graphic EQ 7 band. \$1995

PMR2200A Rackmount 2 x 200 watts powered mixer. Digital effects processor with 95 programmes, 2 effects/1 monitor sends 8 channels. \$2295.

PEAVEY: From Australis, (02) 938-3466.

XR680C 8 channel version of XR600C. All specs as for **XF600C**. Full PA for medium sized bands, Karaoke, hotels and clubs ideal!

XR680 All new! 8 channel mixing with 2 x 150w into 4 ohm power amps for FOH and monitors. Built in digital effects 3 band per input channel. 9 band master eq 16 bit digital effects processor, 128 effects presets. Loads more features, rack mountable. Call for brochures. \$1895.

XR680S All new! 8 input channels and builtin digital effects. Full stereo outputs. 150w per channel into 4 ohms. Main outs, graphic EQ, aux and tape in and outs plus effects are all stereo. Rack mountable. \$1995.

XR800D 8 channel powered mixing desk console, 300w per channel at 4 ohms, 16 bit builtin digital effects with 128 presets 60mm faders. Packed with patching and send features for effects and monitors. \$3795

XR1200D All features the same as XR800D and for XR1600D. Includes also 4 band active EQ per channel, two 9 band master graphic EQ. Pan control 12ch version \$4495.

XR1600D 16 channel version of XR800D. All of XR800D, XR1200D, XR1600D, have 4 x 10-segment led arrays, Hi and Lo Z inputs pre monitor and post effects sends and built in effects \$4995.

SOLO Ultra portable powered PA Mixer/Amp battery operated, 15w of power, 2 band EQ Hi and Lo input 2 channels, tape out for instrument, voice or tape inputs. Takes the power where you want it! \$349

MP-4 A channel mixing system 50w RMS at 8ohms. Reverb patch panel 3 band eq: Hi-Z MIC inputs. Grain control, contour equalization, effects/reverb send control. Remote foot switchable. Duo's and schools, outdoor events. \$799.

XM-4 No frills power 150w RMS at 4 ohms, 4 channel mixing system. High and low 2 inputs, balanced outputs. Reverb, master gain presence, Pre amp out/power amp in. Tape in/out. Church groups, School PA, vocal, PA for small bands. \$1049.

XM-6 Reliable - powerful. As for XM-4 but in a 6 channel vers rugged PA system for smaller applications, school PA systems and small medium - bands. \$1195.

XR600C The industry standard, 300w RMSSamp 6 channel mixing system. DDTcompression. 9 band graphic EQ Phantom power on all channels. Reverb. pre monitor send complete patch channel. Tape in/out facility Aux input. Hi 2 x Loz balanced inputs. Post effects send full PA for small - medium bands or high powered keyboard system. \$1495.

Yamaha Music Australia (03) 699 2388

EMX2300. 12ch Powered Mixer, 250W Stereoc amplifier with protection, Versatile

Low Noise mixer with adjustable gain can accept any type of source, Phantom power for condenser mics, Dual 9 band Graphic Equaliser, XLR & TRS Jack inputs for low or high impedance sources, TRS inserts, 3 Band Mid Sweep Ch EQ, 2 Aux sends, Integrated Digital Reverb with 15 effects, 2 Aux returns for effects or sub mix. Insert patch points for mixer out, Graphic and amplifier allows expansion to run larger PA systems. \$4395

EMX2200. 8ch Powered Mixer, with same specification as EMX2300. \$3995

EMX2150. 8ch Powered Mixer, with same specification as EMX2300 except with 150W stereo amplifier. \$3595

EM1620. 6CH Rackmount Powered Mixer, 200W Mono amplifier with protection, 7 band Graphic Equaliser with limiter to protect speakers, 3 band channel EQ and 2 effects/monitor sends. Low noise high gain mixer with phantom power can accept wide range of sources including condenser microphones, XLR or phone jack inputs. Effects return and separate tape input and output. \$1695

EM2820. 8CH Powered Mixer, 200W Stereo amplifier with protection, Dual 7 Band Graphic Equaliser with limiter to protect speakers, 3 band channel EQ and 2 effects/monitor sends. Low noise high gain mixer with phantom power can accept wide range of sources including condenser microphones, XLR or phone jack inputs. Effects return and separate tape input and output. \$2495

ROSS from CENTRAL MUSICAL INSTRUMENTS (03) 315 2244

PC-4110. 4 channel mono, 150 watts, "Head" style mixer, 4 balanced inputs + Aux input with separate bass and treble controls on each channel, reverb, 5 band master graphic EQ, effects send and return, RCA tape inputs. Retail \$629

PC-6400. 6 channel mono, 400 watts, "Head" style mixer with separate bass and treble controls on each channel, reverb with level control, 7 band master graphic EQ, effects send and return, RCA tape inputs, mix out, monitor out. Retail \$1249

PC-7250. 7 channel mono MIC/line inputs, 250 watts mono, 3-band individual EQ on each channel, 8 band master graphic EQ, full patching facilities. Retail: \$1389

PC-8400. Stereo 8 channel, 200 watts, 2 x 9 band master graphic EQ, reverb, 3 band individual EQ on each channel, headphone level, full patch point access. Retail: \$2169

Electro-Voice from MARK IV AUDIO (02) 648 3455

31PMX. Six channels, Mosfet Power Amp; 200 watts into 4 ohms; Digital Reverb/Delay; Phantom Power; Tape/CD Inputs; Speaker Damage Protection. \$1845

31PMX. Eight Channels; Mosfet Power Amp; 200 Watts into 4 ohms Digital Reverb/Delay; Phantom Power; Tape/CD Inputs; Speaker Damage Protection. \$2056

100M. 100 Watts per channel at 8 ohms; Stereo Mosfet Power Amps; Eight channels; Reverb; Stereo Graphics; 3-Band E.Q.; Two Extra High-Impedance Channels. \$3806

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LDI ORLANDO

Well after twenty two hours in transit and the usual stresses involved in arriving in a new country with a bad case of disorientation, jetlag and a bag full of crushed clothes, I hit the bed, slept and then approached the largest lighting exhibition in the world.

Lighting Dimension International '93 exhibition was this year staged in Orlando, Florida USA and cordiality was the order of the day. The organisation of any event of this quality is an extreme ask and the LDI team managed to pull it off with a smile and professionalism that demands respect from exhibitors and visitors alike. Unlike many other lighting tradeshow I have attended, noise levels were quite controlled (maximum of 85dB(A) even in the NOISY HALL), which made business and research enquiries much easier and it was pleasant to end each day without a headache.

This year showed an increase in Audio exhibitors but LDI still remains predominately a lighting exhibition for Live Theatre of all aspects, Architecture and Film & Television. 7,000 visitors from all aspects of the entertainment industry, were there.

Workshops and Papers were also in abundance with a wide variety of guest speakers, but the most interesting I found was 'Linking

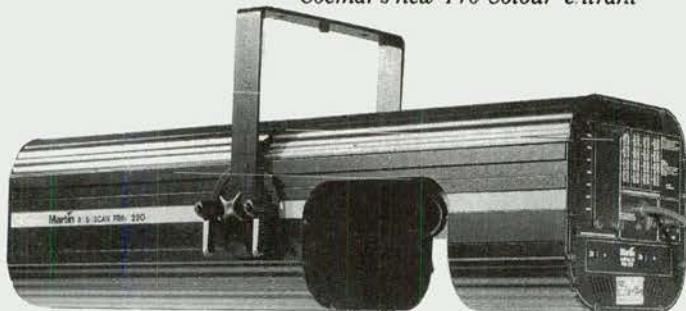
Lighting and Sound - The Fundamentals of Show Control'. This paper addressed protocols. Discussed the difference between MIDI and SMPTE, and Medialink.

New product is what any exhibition is all about. So many manufacturers await a show of this calibre to launch their latest conceptions. But whether the product is an operating/non-operating prototype or a production model, is the question. Manufacturers have to take the risk as all shows are booked well in advance and R&D is always an unknown quantity. I will now endeavour to enlighten you on what products will most affect our local market place.

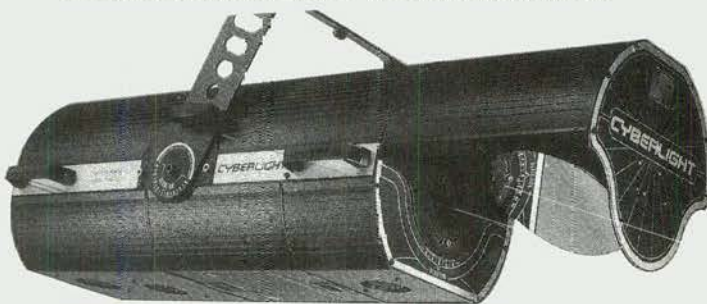
Moving lights as usual dominated the show with the Italians - Clay Paky & Coemar,



Coemar's new 'Pro Colour' entrant

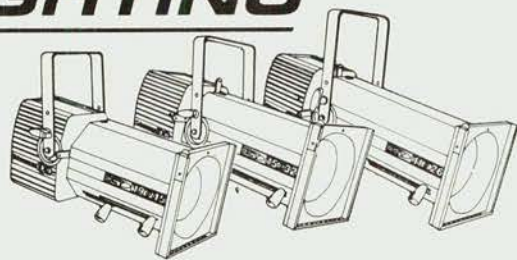


Martin's Roboscan Pro 1220 'R' now has rotating gobo's.



CYBERLIGHT is the new flagship for HighEnd Systems.

CCT LIGHTING



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The fine range of CCT Lighting including the popular 650 watt Minuette and the upgraded 1000w/1200w Silhouette range with increased light output are worth taking a look at. New features include condenser optics, secondary Turbo reflectors, new high temperature iris, and all can be retrofitted to your existing CCT lights. Check out the new 28>58mm profile - the widest beam with hard to believe gobo projection definition and incredibly straight shutter cutting edges. What are you waiting for!

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Write in Reader Service number: 139

the Danes - Martin and Americans - HiEnd/Lightwave Research, shooting it out with continuous demonstrations over the three day show. Congratulations have to be extended to **Martin** for winning Best Lightshow of LDI 93 and to **Coemar** for winning Product of LDI 93 for the NAT TM2500 360 degree moving light without a waggly mirror.

Altman are the most profitable lighting manufacturer in the world, according to the Editor. They continue to punch out classic designs like their Leko and Fesnel, unchanged for aeons. R & D does kick on at Altman, with a new collaboration with GE/Thorn birthing a HX600 compact filament lamp for 120v markets. Around this they have wrapped the **Shakespeare Series™** lantern, which is very sexy looking. The sooner Altman establish one committed Australian distributor the better, so far they have told us they have had three (yes, t-h-r-e-e) in the past year!!!

Clay Paky have released a professional high powered followspot called the **Shadow**. Electronic controls built into a rear-pivoted control pad have made life a little easier for the operator. This fixture carries 24 internal colours along with all the usual followspot features. The **Silverado** is a new low-end intelligent scanner, with high output as it carries a 250watt discharge lamp. Other features include eight colours, five gobos and dimming. An **Eight Channel Controller** suitable for Mini, Tiger and Golden Scans, available with 200 scenes and 50 chasers has also been released from Clay Paky. Needless to say, all Clay Paky product look good, with smooth elegant lines.

Coemars award winning **Nat TM2500** (featured in Connections October 93 Issue) was not the only new feature on the Coemar stand. The new **Nat ProColour1000** features include full dimming, an iris with built in speed pulse facilities, ultra hi-speed zoom with zoom pulse, fully adjustable programmable focus and totally controllable frost. PC1000 also provides colour mixing, flash and crossfade. This fixture is quiet, as it contains a filtered cooling system instead of a fan, so it's well suited for theatrical application. It looks good and carries a 1000 watt halogen lamp.

HighEnd Systems/Lightwave Research released the **Cyberlight** and although it was only Prototype No.1 it was obvious that this fixture was about to go into production. Operated by the dancing Richard Belliveau (President of Lightwave Research and the force behind design conceptions), the Cyberlight went through it's paces successfully and I was quite impressed with it's facilities.

Cyberlight is big, weighing in at 41kg which is the price you pay for housing a ballast on board. Clay Paky's Superscan is 50.7kg with the same lamp wattage, so HighEnd have done OK. The Cyberlight is blessed with an abundance of features but perhaps it is Not Quite Finalised Yet, because the brochure is short on details of lamp and number of control chan-

nels. What they do say is it has four rotating gobos with forward and reverse, and all manner of colour mixing capabilities. High End are leaders in Dichroic technology, and so colour is a strength.

Lightwave have picked up worldwide distribution of a new video product called **SONO VISTA** - a system that turns any video screen into a lightshow. Gobo images strobe and twist, colour and light can all be programmed in advance or live.

New policy: all Lightwave Research product now has 2 year warranty.

Jem have released a new haze-producing machine called the **Water Cracker** using water based fluid. Low power requirements, no warm-up time or oily residue makes this machine an attractive proposition. Also available are several new **Pyros** including, Flame Projector, Smokeless Gerbes and Smokeless Flashes.

Martin had one of my favourite products at the show and this was an extremely user friendly software package known as **3032 Software** (hot name huh!). The software is capable of addressing all Martin protocol fixtures and up to 200 normal DMX channels. Price in Oz will be approx. \$3000 including card. **Robocolour 2-150 Arcstream**, similar in size to a 650watt Fresnel and a brightness verging on a Par64, this fixture has DMX straight in with 2 channel operation, Ch.1 for colour (ten colours) and Ch.2 for dimming and strobe. Finally the **Roboscan PRO1220R**. This fixture was the feature of the award winning Martin show and is basically the next Model of the Pro1220. It now has 30% more light output than the previous model, rotating gobos, more than 20 colours with mix combinations and of course DMX Control. New optics and power factor correction have improved an already viable product. The **Centrepiece** is another new attraction for Martin and combines the best of the Robozap's colours (dichroic) and effects with the power and animation of the Roboscan. Octagonal in design, with 8 clean beams powered by a 1200 MSR lamp which are then deflected off a centrally located revolving mirror wheel, the Centrepiece looks cosmic but at the same time reasonably attractive for a hunk of gyrating metal.

MARTIN BOUNCE BACK - & WIN!

I'm sure Peter Johansen and the rest of the Martin team are feeling pretty chuffed with themselves, after winning "Best Lightshow" awards at both PLASA '93 and LDI '93.



Noel Bourne from CUVT, on the locse at LDI, meets up with a 'hocter girl'. Yup. HOOTER.

Designed by LeRoy (Roy) Bennett and operated by Mark Ravenhill and Steve Rawlins, the Martin show was no less than stunnir g. Among the mechanised rigging grid, nestled a huge range of Martin Moving and Effects Lighting including such products as Pro 1220s, Pro 218s, Robocolours and Robocolour MSDs and the new Centrepiece

Roy himself is quite an illustrious creature having been Prince's lighting and set designer since 1980. Other credits include, The Cure, INXS, UB40, Van Halen, George Michael, Janet Jackson & Bryan Adams

Roy programmed the show with the Martin team in Denmark on the new 3032 PC based controller and a DAT machine. Of the show he says, "I've never done it this way before, you know, layering the lights to create a look; it's like mixing an album, and that's great. The Pro1220 is a pretty cool light and to my surprise there's enough colour choice for me".

The show was very impressive, with an unusual soundtrack combining both music and audio effects. I especially enjoyed the use of white light (on mass) in the later half of the show.

Martin have lifted their profile in recent months, against stiff competition.



AT LDI- Con Andrews (Black Express), Roa 'LAVA' Salmon and Emmanuel Ziino of the Australian DJ Supply Co.

LDI

Jands and LSC Electronics were the only two Aussie exhibitors, who both seem to be increasing their share of the difficult US market. Gary Prichard and Alan Gregory from LSC manned their own stand, their American arm is called "LSC AMERICA INC". The new Axiom console attracted a lot of interest. They also pointed out the PRECEPT is not dead yet, contrary to our speculation recently!

Jands were on the stand of AC Lighting, who are their major distributor in the North World. The ever elusive Paul Mulholland expressed satisfaction with proceedings, and quoted a growing list of LD's using Event consoles. ESP II is doing great business in Europe too, he told us.

Lee Conlon from Showcraft was there too, now known as 'the flasher' because he walks the floor and reveals his products from beneath his coat!

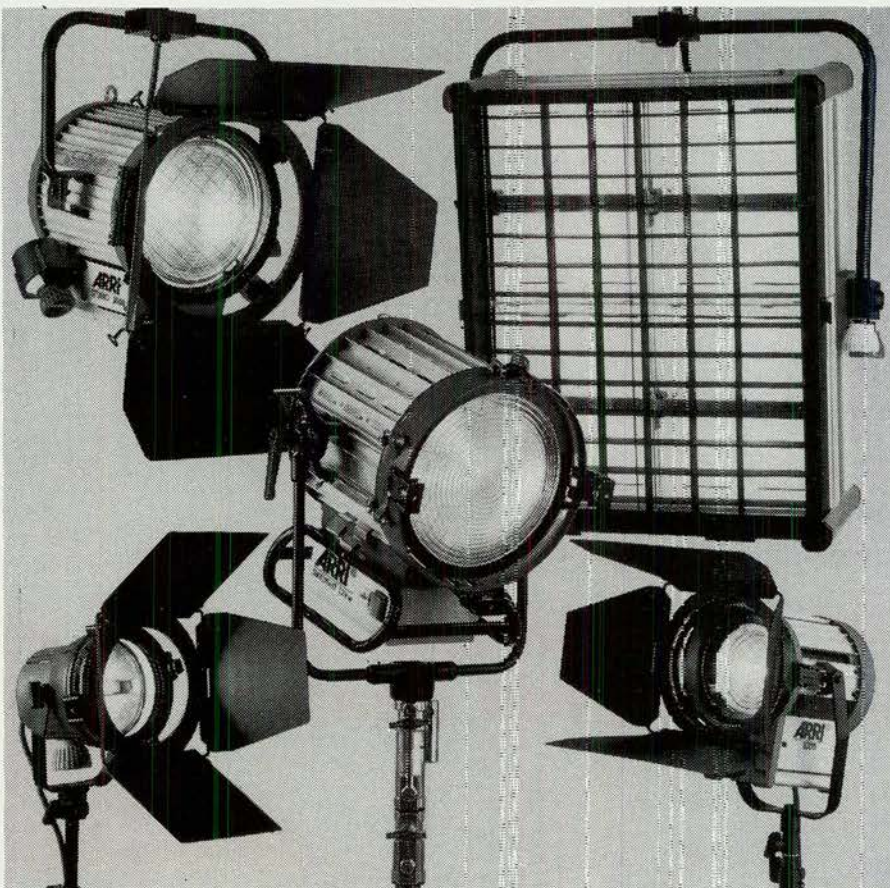
Conlon's pocket DMX Commander was a hit at LDI.



Martins Lightshow, in glorious mono!



Con Biviarno (Universal) with NuMark personages Alan Gregory from LSC is visited by Andrew Holmes from Premier.



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Digital Audio Recording for ASR-10

ENSONIQ say an operating system upgrade for ASR-10 Advanced Sampling Recorder adds digital audio recording to hard disk or to RAM memory. This allows the musician to add up to two tracks of live audio performance to MIDI sequenced tracks for full production in a single product.

The new O.S. Version 2.0 features digital Audio Tracks which can be recorded to either DiskTracks (SCSI hard drive) or to RAMTracks (internal memory). This upgrade makes the ASR-10 the first instrument of its kind to integrate a sampling workstation with digital audio capabilities, they say. The floppy disk-based software will be available free to all ASR-10 owners upon its release in November 1993, and will be the standard operating system shipped with all ASR-10 samplers at that time as well.

Audio Tracks work like additional sequencer tracks, recording incoming audio instead of MIDI data. They can be recorded in conjunction with individual sequences linked together. The ASR-10's locate mechanism allows users to instantly move to any section of music and



resume playback of both MIDI and audio data.

Recording can be routed through the onboard 24-bit effects processor for signal conditioning or coloration, and tracks can be bounced down through the effects for multiple effects processing. Included with the disk are 12 new 44.1 kHz effect algorithms to enhance all digital recording. Two tracks can also be bounced down to one, making room for further recording.

"The ASR-10 was designed with the flexibility to expand its capabilities so we can support

our customers with ongoing upgrades and improvements," said Steve Claflin, of Ensoniq.

Plans to further expand ASR-10 capabilities with future operating system enhancements are also being developed, according to Claflin.

The O.S. Version 2.0 requires ROM version 1.5, which may require installing new ROMs for a nominal fee. For further information, on the upgrade or to determine your ROM version, please contact Electric Factory Pty Ltd, 188 Plenty Road, Preston, Vic. 3072, Tel: 480 5988. A new ASR10 costs \$4999.

info freako

READERS Q & A

With Danny Dun

Danny,

I think I need to enter the high tech world for by band, 'Byte Us Please'. I play guitar, and want to sample or record some guitar parts, then replay them by triggering them at an exact time in the show. What gear do I need for this?

-Horry Chrome Licker, St. Kilda.

First a decent sense of humour, hopefully some talent and loose the guitar! Take up keyboard! No, joke! Depending on how much time you need to record for, a simple sampler will do the job like an Akai S01. This will allow you to have 8 sounds happening at once and a total sample time of up to 30 sec and even a guitarist could learn how to use it (I hope). You will also need a footswitch to trigger the sample and a MIDI program change footswitch to change sounds. Some digital delays also allow basic sampling however generally you can't store the sample after power is turned off to the delay so you have to re-sample it each time, this may suit the situation though. With a sampler you will be able to save your samples to disk and reload them

as you need. Spend more money and you can buy bigger samplers that do more, it depends on how much cash you are prepared to part with! PS Chrome WHAT?

Dear Danny,

I don't understand why Samplers don't use more RAM to store recordings. It seems to me RAM is more safe (ie: no moving parts, unlike a hard disk) and surely more reliable. Why not just build in more RAM storage?

-RAM FREAKO, Freemantle.

It costs too much. Simple answer. However this is coming. New drives are currently entering the market that are RAM based - however they are very expensive. My obvious prediction for the next big thing are bulk storage RAM cards like a keyboard sound card but with heaps of memory. These cards would plug straight into future systems and be able to store many albums worth of audio. Also because they will be RAM based they will be much faster than hard drive. This will lead to new boxes that will be able not only to sample but run multiple track hard disk style recording along with real time broadcast quality video plus heaps more!!! These will eventually replace CD, video tape, disk, DAT, all tape based formats and hard drives. (A great BIG Danny Dun prediction, folks, not necessarily an idea shared by all in the Crystal Ball business. -Ed)

This is several years off though, so don't rush out and sell all your current gear! This will spill over into the consumer market with a combined home entertainment system with audio, video, games, and computer functions all in the one box. Using the one card for storage that you take in and have loaded with your new entertainment package from the dispensing machine in Brashes. YESSS! Oh well, enough dreaming for now.

Dear Danny,

Can I buy samples on disk and use them in my studio without fear of copyright breach? Also, have you used the E-Mu SP-120C? The US rappers say it is the greatest sampling drum machine ever, even though it's an old thing. I might try to find one - where they ever sold here?

-De Lizzo, Dulwich Hill NSW.

Can you use samples on library disk with out fear of copyright? Good question. I'm not a lawyer so I can not officially advise on this but you do have to be careful. Most libraries whether on disk, CD or CDRom are free from copyright for use in productions as this is the intention in production of the library. However you cannot copy the library in whole or part for resale as a sound

(contin. ed)

info freako

library. Some sample CDs (eg: the new Vince Clarke "Lucky Bastard" sample CD which is *fantastic*) has a copyright notice on it which states that you can only use the samples for personal pleasure. In this case you need to obtain clearance if you wish to use the samples for any commercial gain! Having said this I do not think that it would be a problem to obtain clearance. The bottom line is that all of these libraries contain some form of copyright notice and if there is any doubt as to the copyright situation you should check the individual cases with a solicitor. It really shits me that the music industry has come to this but you have to look at it in the light that if it was your material you would probably appreciate the protection.

Ah the SP1200. Yes they were sold here and they are quite rare as they're a bit of a collectors item. There is also an SP12 which is similar. In fact the demand for the SP1200 in the USA was so great that EMU has recently produced a special run of about 200 of these! I think they were only a 12 bit machine but they had a certain sound character that was sort of rough and grainy that really suits HIP HOP. As they were also one of the first sampling drum machines at a reasonable price HIP HOP artists could afford them. The programming interface is also fairly intuitive and suits HIP HOP, R&B, House ETC.

Good luck. I've seen 2 SP1200's and 2 SP12's in 5 years. I think they are worth getting hold of. However I think the number one sampling drum machine is the AKAI MPC60. (*You would, Danny. -Ed*) This is also widely used but HIP HOP, R&B and dance artists in general (especially in the USA). I also think this is the most widely used sampling drum machine/sequencer as used by dance artists. I say this not just because I'm the Akai product specialist but also from the wide base of users out there who share my opinion. *PS: if you come across an MPC60 mark II please let me know as I had one stolen from my place!*

Dear Danny,

First I'd like to thank you for providing useful information. My question regards bulk storage of digital data. I see things like the DynaTek TRACK Series of rack mountable storage systems advertised, and wonder about SCSI connections. My Mac has a SCSI port, so presumably it'll hook up and mount normally, but would a PC be connectable too? *-Paul Tangier, Toronto NSW.*

We've had a lot of questions on SCSI lately. SCSI was designed as a means of transferring info between small computers and their devices (Small Computer Systems Interface). The

engineers sort of got together and designed a certain set of rules for SCSI covering the hardware, data format to be sent and the commands to be used in the system. As long as the devices connected to the SCSI system (called the SCSI bus) adhere to the standard ... no problemo!

The only limits are the software you have to actually control the data transmission and the physical limitations of the bus. A bus is simply a common set of connections between different parts of a system, think of freeway between two cities and all the towns between are connected to the freeway. The cars on the freeway travel both ways and can exit or enter at the appropriate offshoot. The freeway is the bus and Australia Post trucks running along the road are the data (and I don't mean the kind of bus you travel to work on although this is also a good analogy and is where the term originates). *-Wha?? -Ed*

To connect a PC to any SCSI device you will need a SCSI interface for your PC. This allows the PC to translate PC format data into SCSI format data. Once you have fitted this and as long as you have software to drive the interface and the device in question, you can connect just about any SCSI device to a PC.

In fact, as an example, we recently connected a hard drive formatted for a Peavey SP sampler that we had loaded with library sounds to a PC. We then used special software package to transfer this into the onboard SCSI hard drive. Once this was completed we connected a SCSI CD ROM writer and made our own CDROM of the data for the Peavey SP!!! The CDROM writer was a Sony device that was designed to work with either a MAC or PC based computer all you needed was the appropriate software. We can now use this CDROM in a CDROM drive connected to the Peavey for loading of samples! This gives you an example of how flexible SCSI can be. Note that I am not saying the PC could read or use the Peavey files it could just transfer the data in this case.

Many people have loads of trouble with SCSI. Here are some points to watch:

1. The total cable length should be no longer than 6M although shorter runs can even cause problems! I recommend that you go no longer than about 4M. This is total cable length! IE: if you use three 1 M cables that's a 3M length.

2. Use high quality cables designed for SCSI use, not printer cables as these often cause problems. Some times simply changing what seems like a perfectly good cable can solve a problem!

3. Termination. What a pain in the butt. It is really quite simple though. Termination is a way of supplying power to the SCSI bus. By

terminating a device it now supplies power to the SCSI system. SCSI requires that two devices in a system be terminated. Any more than this and you could cause serious damage to the SCSI interfaces connected to the system. Why? Too much bloody power to the system! Less than two devices terminated (assuming at least two devices are connected to the system other wise you don't have a system do you?) - not enough power.

4. The position of the terminated devices is important. These should be at the ends of the chain. EG: If you have a Mac, a Hard Drive and Sampler, terminate the Mac and the sampler and not the drive. I have a simple rule. If the device has one SCSI cable it is probably at the end of the chain and should be terminated if it has two it is somewhere in the middle, therefore it should be unterminated.

5. SCSI ID. With SCSI there are 8 ID numbers (0 to 7) and each device in the system must have its own number. No two devices can share the same number. An example of a possible problem occurs when using a Mac. Apple have set the Mac to ID 7 and the internal Mac drive is usually ID 0. If you now connect a Sampler and a removable hard drive be careful what IDs you use. If the sampler is set to four it would be OK, no conflict. If the removable drive is set to 0 ouch! In this case if you try to format the removable drive for use with the sampler than it is possible the Mac internal drive will also be formatted (I know someone who has done exactly this!). Say goodbye to all your Mac files!

6. Power up order can also cause problems. Generally it is best to power up peripheral devices such as drives first then the host (computer/sampler). If you are having problems after all of the above are OK then try a different power up order.

**Danny Dun is Digital Products Manager at Australis, also a member of 'Clan Analogue'.*

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What is MIDI & how does it work?

part seven

MUSICAL INFORMATION TRANSMITTED VIA MIDI

2. MODES (continued)

In this mode, the information belonging to each guitar string is sent on separate channels, dividing the sound source into 6 monophonic synths. Then a BASIC MIDI channel is set, and the next 5 channels are used for the other strings.

To choose whether to use POLY, MONO, OMNI, etc., MIDI includes a MODE selector, with four possibilities - MODE 1 - 4.

MODE 1: Omni On, Poly.

Receives the information on all channels Polyphonic.

MODE 2: Omni On, Mono.

Receives the information on all channels but will only play one note at a time.

MODE 3: Omni Off, Poly.

Receives only on the chosen MIDI channel Polyphonic, useful with sequencers.

MODE 4: Omni Off, Mono.

Receives on specific MIDI channel/s, will only play one note per channel. Useful with guitar controllers.

2. Main Contents of MIDI information.

MIDI contains many kinds of information, that it can use to transmit performance details from the master to the slave. Such things as when each note was played or released (note on and

note off), damper pedal on and off, etc. Also, the information is divided into "channel messages" and "system messages".

Channel Messages.

These messages are sent via the individual MIDI channels to specific instruments in the system, are therefore only effect those instruments receiving that channel. Channel messages include note on/off, damper pedal on/off, pitch bend, etc. These Channel Messages are further divided into two categories, "Voice Messages" and "Mode Messages".

(continued next month)

Re-printed from the MIDI Guidebook, courtesy of Roland Corporation.

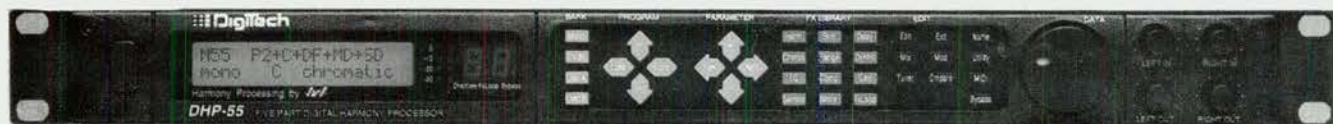
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CAD "EQUITEK" SERIES PROFESSIONAL MICROPHONES

Bruce Waite reviews two microphones - never an easy task!



knows exactly how his voice should sound on tape.

The E-200 is a large microphone which approaches the size of one and a half beer (oops, soft drink) cans joined end to end. The chassis end of the unit is a large black barrel containing the 20dB pad switch, the bass roll-off (or high-pass if you prefer) switch, the power switch and the three position pattern selector switch. Also housed within this chassis is a pair of internal Ni-cad batteries and the pre-amp circuit which boasts "no interstage capacitors in the signal path"

so as to supposedly create "a dramatic reduction of phase anomalies throughout its frequency bandwidth". Electronically, this claim makes sense and upon listening to the E-200 it is obvious that the microphone does

offer a very true-to-source signal.

Looking at the frequency response chart would lead one to believe that this is a mic without a "presence" peak however this seems to be another case of a "dead flat" product which doesn't sound the same as every other "dead flat" product we've heard. In the history of Blind Lemon Pie we have listened to untold numbers of products which are said to have flat frequency response and yet it is very rare to find two of these products which sound the same as each other. Harping back to our example in the first paragraph, this is why it is almost impossible to concur with all people as to what is a "flat" microphone or indeed speaker. Also, as our editor keeps reminding the reader, "Flat" = "Boring"!

The E-200 does exhibit a promotion of the "presence area", as do nearly all expensive condensers, however this does not make the mic

sound nasty, it simply gives it a nice character.

When initially using the E-200 (and the E-100) it is necessary to charge the internal Ni-cad batteries for approximately 12 to 15 hours, so if you are impressed with a demonstration, which is on the cards at \$1695 rrp, don't expect to rush home and use your mic immediately. The test units were supplied to us by David Croxton of Australian Audio Supplies and it was he who offered the advice that the internal 9 volt Ni-cad batteries were in place to assist the 8mA phantom supply in dealing

with transients presented to the pre-amp by the high SPL capsules at the mic-head. An interesting concept indeed and yet the manufacturer claims the Equiteks can perform to spec for six hours without phantom power if the internal batteries are fully charged, this is good but it left us wondering, based on

what David says, how well the units would reproduce transients without both power sources present.

Considering the necessary amount of active circuitry within these mics, and the fact that the E-200 is about half the price of an equivalent Neuman, the audible signal to noise ratio is quite impressive. Whilst not being a quoted specification, we arrived at this conclusion simply by listening to the general absence of "hiss" at the output when using even absurd amounts of mic input gain.

Before going on to specifically describe the differences pertaining to the E-100 we must talk briefly about the SM-1 swivel mount provided with the E-200. This is basically two flat metal bars with the relevant hinges and mountings needed to place the mic on a conventional stand. The "bottom end" of the test unit seemed to be lacking the clarity of previous

"We have listened to untold numbers of products which are said to have flat frequency response and yet it is very rare to find two of these products which sound the same as each other."

Chhheeck whoon twooo! Chhheeck whoon twooo! "Great", we remarked, "test these mic's" said the distributor, as if testing a microphone was as simple as plugging it in and talking. But it was not to be!! Reviewing mic's and speakers is a very subjective task because as sure as one guy says the Acme B-72 Overflipper is great on a kick drum the next guy will tell you that your full of it and that the Overflipper only ever works on trumpet recordings.

Fortunately we have had a history of experience already with the Big Brother model known as the "Conneaut Audio Devices" E-200. This microphone has been purchased by several people we know and all of them are more than satisfied with their acquisition. These owners include musicians, studio owners and one very, very well known professional vocalist whose name we can't quote, but he is a "legend" who

units we had used and we eventually realised that if you held the SM-1 gently with your fingers that the clarity would return.

Uhh-Ohh!! The manufacturers specified mounting system resonates and consequently adds nasty and unwanted overtones to the first two octaves: Moral...great mic, not so great mounting system!! Now before the importer gets upset we should clarify that the E-200 seems to have a standard large mic thread on the chassis and can be used without the SM-1



SPECIFICATIONS

CAD "EQUITEK E-200"

3 PATTERN ELECTRET CONDENSER

POLAR PATTERNS	FIGURE 8, CARDIOID, OMNIDIRECTIONAL
FREQ RESPONSE	10Hz to 18kHz
NOM IMPEDANCE	200 ohms
THD	< 0.15%
MAX. SPL	148dB (w/pad)
DYNAMIC RANGE	132dB
POWER	48V PHANTOM (and internal Ni-cad's)
PRICE:	\$1695 Retail

but it would make positioning the unit very awkward.

As for the E-100, this is a single pattern version of the E-200 and is a super-cardioid mic employing the same servo-circuitry as it's big brother. Housed in a flat slim-line chassis similar in size to a small hand held phone, this model has an inbuilt swivel mount (no resonance), also quotes a 148dB SPL and as such claims to be a condenser capable of living inside a kick drum. (Ahem, Ahem!). Upon opening the large plastic suitcase supplied with this model the first thing the user is presented with is a bright green warning notice stating, amongst other things, that "this mic will go as low as 10Hz...honest". After laughing at the "honest" quote we concurred that this notice probably is a good idea for those not used to using condensers for drum mic'ing as they could well leave the low frequency drivers of their monitors hanging out of the speaker surrounds. This model retails for \$995 and consequently both models seem to be very reasonably priced considering what they are competing against in the market.

Last, but definitely not least, both models are available in matched stereo pairs and this is where other suppliers/manufacturers could well take a leaf out of the Conneaut Audio Devices book. ●

We would like to express our appreciation to CLOUD STUDIO'S for allowing us to use their newly completed facilities as a means of evaluating these mic's in a suitably anechoic environment.

CAD "EQUITEK E-100" SPECIFICATIONS ELECTRET CONDENSER

POLAR PATTERNS	SUPRECARDIOD
FREQ RESPONSE	10Hz to 18kHz
NOM IMPEDANCE	200 ohms
THD	< 0.15%
MAX. SPL	148dB (w/pad)
DYNAMIC RANGE	132dB
POWER	48V PHANTOM (and internal Ni-cad's)
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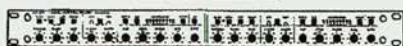
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END USER REVIEW

Digitech DHP-55 and TSR-24

Bruce Waite explores the latest from Digitech, a five part harmony processor, and a stereo multi effect processor. What's new? Do Digitech use "The International Almanac Of Necessary Effects For Design Engineers?" Read on

Well here we are again with a couple of one rack space digital sound processors. This time they are offered by C.M.I. in Melbourne and under the already established name "Digitech", they are manufactured by Harman International. We remember years ago, when one of us owned a P.A. (and the other guy was smart enough not to....), buying the original Digitech DSP series processors and as anyone who has used the P.A. at Sydney's renowned Annandale Hotel will tell you, they weren't the easiest unit to use and/or get a sound from.

That must have been "ye olde" Digitech company because these units are a far cry from the DSP series effectors. Both the DHP-55 and the TSR-24 feature full 20Hz to 20kHz bandwidth, the multi-effects unit offers 18 bit A-D-A conversion with an internal sampling rate of 48kHz while the Harmoniser offers 16 bit A-D-A converters with a sampling rate of just 41.667kHz.

Now, looking further into the CPU area, how's this for another example of specifications not being consistently presented; the Multi-effects unit offers its processing spec's as being a 24 bit "width" on its signal processing path whereas the Harmoniser offers its processing spec's as being "Dual 10 MIPS processors in parallel (20 MIPS in total). Can you spot the direct comparison here?, we don't think we can.....anyway.....

As we've mentioned before in reviews of digitally based products the competition between brands is fast coming down to the user system. Considerations concerning inherent expandability and ease of accessing parameters and algorithm structures are quite often a big deciding factor in current purchases. How many times have you heard someone say "yeah it sounds alright but it's too slow to program!" Here, Digitech have come up with a very in-

teresting algorithm structuring method for the TSR-24 whereby the user is allowed 256 CPU blocks and 256 RAM blocks which they are then free to spend on their choice of "features versus quality" effects structures.

For instance using an EQ module in your algorithm would eat up a fair whack of CPU blocks for decision making while requiring almost no RAM blocks as the sound does not need to be stored when changing the tone. On the other hand a digital delay request would yield a small allocation of CPU blocks for the few necessary parameters yet conversely it would require a lot of RAM for sample storage to allow long repeat times at full bandwidth.

Other features for the TSR-24 include four Access keys which allow four often used parameters in each program to be continually "jumped to" at the push of a button. The programming of this function is dead easy and as with all the functions on the TSR-24 we found a good deal of visual confirmation when making our editing choices. Within the many effects modules in the software system there are a number of mixers employed to make full use of the processors' two inputs and four outputs, there are also four different noise elimination modules which operate with a medium degree of efficiency as well as the ability to label "same name" modules within an effect as say "chorus A" then "chorus B" so as to save the confusion derived from some competitors Algorithm systems.

To be honest, the sound quality of both the Harmoniser and the Multi-effector are what you'd expect from units of this price and to go too far into the audio quality of these units would be a poor use of editorial space. We feel also that the types of programs available on these two units are fairly much derived from "The International Almanac Of Necessary Ef-

fects For Design Engineers" and suffice to say these units cover that whole range of the usual Choruses, Flangers, Delays, Mega-Reverbs, Noise Gates, Compressors, Multi-color handle Spaceships, Distortion, EQ's and simple Pitch Shifters through to unbelievably inventive Chordal Shifters.

No....we feel we could do these two units more justice by using the available space to better describe the system features such as the in-built LCD strobe tuner, with "trough" and "mute" mode, featured within the DHP-55 Five Part Harmoniser.

Even though the DHP-55 would be able to cut studio use, it does seem to be designed with the "on-stage" techno user in mind. The first feature that points to this is that programmable effects loop (a winner with guitarists), also the inclusion of Distortion and Speaker Emulators adds Waite (and Macken) to this theory. MIDI implementation is, however, represented very well on both these new arrivals and there are even various on-board samplers available within the pair. (Ohh no, now they've managed to make multi-effect units become samplers; does this mean they will soon collide with all the samplers that are employing on-board effects processors and that all these products will collectively become known as "musicians"?)

As far as display features go, the DHP-55 has a screen with a nifty set of square component titles that ignite (?) to enhance the LCD writing so as to make it really easy to really quickly be really sure that you know what really complex effect you are really dealing with! Now for the Multi-effect processor, here is a simple display feature that, as far as we're concerned, is long overdue.

To explain; as we've said in the past when discussing processors with multi-input/output



configurations, the problem with the learning curve has so often been simply that it is too hard to establish really quickly just exactly which socket on the back is going to suddenly pump sound out of which other socket nearby.

Thanks to Digitech this may never happen again as they have quite wisely devoted a portion of the TSR-24's Algorithm display window to exhibiting a small graphic that "draws" an example of the current Algorithm input to output configuration. This is good because the "24" has a choice of Mono to Mono, Mono to Stereo, Mono to Tripleo (Smirk.. stupid boffin humour), Mono to Quadruple outputs and a final mode that enables two independent Mono to Stereo processors to be run simultaneously. Just for good measure, unlike other vari-rout-

ing do-all boxes, these Digitech signal routings don't control the actual use of the rear sockets, rather they are a software assignment of the "audio" which is then followed by the users relevant choice of one of twelve available software "audio" mixers.

The combinations are endless with these two units, and if you're into groovy, cross-regenerating, MIDI responsive, self EQ'ing, modulated, pitch delayed-reverb patches from beyond the black hole, then might we suggest you don't so much listen to these two new Digitech's, but rather, make sure the salesman leaves you to experiment for a while. *

Digitech is distributed by Central Musical Instruments, (CMI). Call them: (03) 315-2244.

DIGITECH DHP-55 : \$2899

INPUTS: LINE/INSTRUMENT
OUTPUTS: LEFT/RIGHT/EFFECTS SEND

PROGRAMS: 100
TYPES: PITCH SHIFTER/CHORD SHIFTER/SHIFTING EFFECTS/DELAY/CHORUS/FLANGING/DISTORTION/GRAPHIC EQ/DYNAMIC FILTER/COMPRESSION/NOISE GATE/DIGITAL SAMPLING/LFO'S/ENVELOPE GENERATOR

DIGITECH TSR-24 : \$1999

INPUTS: 2 x 1/4" BALANCED TRS
OUTPUTS: 4 x 1/4" BALANCED TRS
PROGRAMS: 128

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adat: the WHOLE story

Dave Macken (half of the Blind Lemon Pie duo) tells of his experiences with the Alesis ADAT 8 track digital recorder - at home, on the road, and half way around the world..... is it all it cracked up to be?

Not so long ago a huge entrance was made by ADAT, ushered in by the Alesis Corporation, new technology, digital technology, affordability with a capital 'A' and expandability that was going to put you up there with the big boys/girls/persons. What did happen or is happening to ADAT? We do know the whereabouts of one very interesting ADAT. This particular ADAT has done some WORK! Actually a shitload of work! This includes different applications as well as varying environments and situations. So far this machine has been recorded upon (it's obvious use) for: commercially released compact discs, for archiving, for tape compilation and duplication as well as having been connected to and alongside a range of associated devices. Throughout all this it has been travelling, thousands and thousands of kilometres, inside a roadcase as a mobile recorder, just for good measure.

Rather than put something on test over a short period of time, and comment accordingly, we're going to look at the life so far, of this ADAT. We'll follow this machine through it's short and adventurous life (commissioned just over six months ago) to see what it has done and how well it went about it's business, most of the technical stuff we'll leave till later in the article when we can break the product range down a little further, which will make it easier to fully appreciate the capabilities of an expanded ADAT system. Suffice to say if you are a total novice and have never heard of an ADAT, here's a brief summary.

The Alesis ADAT (Alesis Digital Audio Tape) is, as a stand alone unit, a digital multitrack recorder (8 tracks) inside a 3 ru high shell that runs a Super or S-VHS tape format (yep, same size cartridge as your video recorder). It is straightforward in it's approach to use and upon first viewing you'd be forgiven for thinking it WAS the latest in video recorders.

When ADAT was first released in this country we went along to the product releases and their very impressive demonstrations, the ADAT by that stage was so hyped it HAD to be impressive. We saw a multi-ADAT system operating and were reasonably impressed, also we were given the rave about where it will fit

into your existing set-up, and how ADAT will be supported. Upon leaving these releases we promptly forgot nearly everything that had passed through our ears (is alcohol a bad idea at such events...?,...NAAH!) and decided to wait till either the need arose to work with one of these suspicious video recorders or until associates started to sprout prolific about the virtues or misgivings of the Alesis ADAT. (*That is, wait for some street vibe, huh Dave? -Ed*)

Nobody told us anything at first, though the need for an ADAT did come into the picture somewhere along the line and without realising it, this article started to take shape.

A multitrack recorder was required for demoing songs on, which could then be used for final recordings that would be sent overseas to be used alongside existing studios for mixing. The trial period was short, an ADAT was hired, and recording began. It's first job was simple, synchronise with a computer that would then run down sequences to tape tracks, in this case an Atari 1040 supporting Cubase. This didn't really pose any problems for first time users, by employing a JL Cooper Datasync we could use the Midi Timecode from the Atari via the Datasync and, in turn, the ADAT joined in with it's own synchronisation protocol.

To achieve synchronisation we next had to format a tape which is, in essence, the equivalent to striping an analog tape with timecode on one track. The great thing about formatting an ADAT tape is that you get single sample accuracy without losing a perfectly good recording track to the timecode. Anybody having used an eight track recorder would appreciate this as eight tracks soon turn into seven once the tape is striped with timecode. The length of time it takes for completion of the formatting process also reveals the amount of available recording time on the S-VHS cartridge used, we found about 42 minutes from an Ampex 289 SE-180, at full 48 kHz sample rate, was average. The specifications printed in the instruction book quote the recording time as 40 minutes from an S-120 though this may not account for the 2 minutes and 15 seconds used to write setup data at the beginning of the tape.

As much as the ADAT boasts the ability to

have it's formatting process interrupted for whatever reason this didn't prove such a wise idea as on the occasion we tried it, the interruption to formatting caused a timecode hiccup resulting in reformatting of the tape. For the terribly impatient among us any of the eight tracks may be recorded on whilst the tape is formatting, which is handy.

As we've already mentioned the operational approach of the ADAT is quite a straightforward one, the tape transport controls offer the usual rew/ff/stop/play/rec functions as well as allowing the tape to be engaged or disengaged with the audio head by pressing the 'stop' button, enabling the user to enter one or the other mode. By including this function the ADAT, with tape engaged, is able to shuttle through the tape at higher than normal playback speeds while being monitored and also, with tape disengaged, take advantage of higher speed tape transport activity for rew/ff and improved autolocation. Till we got used to this idea, a lot of time was wasted realising we were in the wrong mode as the time on the counter either trickled by or sped off into the depths of the tape.

Further to this we learnt to make use of the three available Locate functions because the tape counter is unable to be totally accurate when the tape was rewinding or fast forwarding with the tape disengaged from the head. The discrepancies ranged from 8 seconds to 4 minutes once the tape re-entered 'play' mode, the 4 minutes lag with the tape counter did only show up when we tested a TDK XP SE-240, which at the moment, despite constant rumour in the USA of even longer tapes soon becoming available, goes against recommendation - due to it's tape length we assume. It isn't actually the ADAT holding up longer recording times, it does recognise an E-240, rather the tape manufacturers run into problems with tape integrity on longer lengths.

While at this point the ADAT would sync quite happily most of the time, it did, at other times dither about locking against the incoming timecode, sometimes totally upsetting itself while it frantically searched for synchronisation. This had been the only real irritation so far as the recordings were sounding great and coming together well.

To leave the responsibilities of sound quality resting squarely on the shoulders of the word 'digital', simply because it is printed in



the instruction book, would be an injustice. The conditions under which the ADAT is used should surely have a great effect on its performance.

The cables used were definitely nothing special and, more often than not, we only really used a mixing desk to monitor playback. Preferring to garner audio straight from the outputs of whatever source was being used, the track recordings we were hearing back from the tape were shaping up as faithful, dynamic reproductions. The clean crisp top end is maybe a little less hard, or brittle, than some other digital recorders and as usual the lack of any extraneous noise in the tracks was a joy, even after multiple tape passes. The fact of the matter is that the Alesis ADAT does record and reproduce very well. These sentiments are certainly echoed by Ron Gayden who has been doing a lot of digital multitracking lately and has just completed an album for leading trombonist Greg Van Der Struik, recorded entirely on an ADAT.

Anyway back to the ADAT at hand... in the same manner as the recording technique: minimalist and fast all the way, so too was the Little Boots production team, of Sean and Jamie Fonti, who were quick to complete 2-track mixes using very little outboard equipment. The next task would see if the ADAT could fit into a plan to record final tracks here in Australia, at two different studios and then send the whole thing overseas for mixdown.

Having eight tracks available on one, and one only, ADAT, the recording of final tracks had to take a different approach as many more recording tracks were needed in order to acquire further instrument separation. Normally a project like this would immediately graduate to a 24-track or larger where all tracks could be monitored at once, though having only a single ADAT meant all tracks had to be spread across a few S-VHS tapes. Alesis's modular system plan would, if posed with such a problem, merely add another couple of ADATs to construct, through its Proprietary Multichannel Optical Digital Interface, a giant ADAT! (up to 16 ADATs can work together giving a total of 128 tracks). Not having a spare ADAT work began by creating corresponding start times on the different tapes. Now individual (or sets of) pertinent tracks could be layed to tape and theoretically, if all tapes were played back synchronously, the tracks could join together to establish an 'all tracks' mix to work with.

With three tapes containing a submix of relevant guide material, all with exactly the same start times, the recording procedure was able to move along quite rapidly. By completion the tapes would contain a useable and separated cross section of instruments, guitars may appear on one tape, vocals and keyboard parts on another, instruments needing greater mic setups, like drum... oops...drum kits, may reside on their own tape. To make things better still, down time during recording had been reduced dramatically, as much of the normal pre-production was performed prior to entering a full scale, not to mention more costly, studio environment.

On a performance level the ADAT had, by this stage, performed quite a few hours of record and playback, with and without sync, and was holding up OK for a machine that had been moved around a lot. We weren't too sure though about some little quirks that came to light through constant use, like the way the Locate function will, for yet unexplained reasons, send the tape off in the wrong direction or what 'Error 2', that appears in the time display window before promptly ejecting the tape, actually means. On the other hand ADAT should be commended for its good metering and great sound results that it continued to deliver.

The one thing that will save Alesis from any realistic design or running flaw is their constant upgrading of the ADAT's operational software, which is changed by installing chips of a higher software version. They began with Version 2.01 and are at present up to Version 3.05. As beneficial and supportive as this is, most other people we spoke to didn't know this was the case and some ADATs that we've seen, out on hire, have had earlier software versions than the current upgrades available. Go figure. Anyway, quirks or not, the instant the ADAT's work was finished here in Australia, it was packed off to England.

Ahh... the sights of London, the people, the places... crap! This ADAT travelled as normal baggage inside a 5 ru roadcase, which brings us to a problem. The ADAT fit snugly into the American built case we had though, due to the positioning of the rack mounting holes, would not go fit correctly into the Australian built Cadillac Case without shifting the rack strip along by 1/2 a rack unit. While we were in Sydney, quibbling about the mounting holes being in the 'wrong' position, all hell was break-

ing loose in London.

The Little Boots guys had an album to complete in London and prior to leaving, they and all concerned, had been assured that it would be no problem to hire or at least procure suitable ADAT peripheral equipment. The English obviously have a great sense of humour as two days were given over to scouring the countryside to find a suitable syncing device for the ADAT, whereas the stop over in New York could have yielded any ADAT peripheral desired. It was looking so desperate that we even tried to hire (after being unable to purchase) another one here in Australia that could be couriered over. Unfortunately the Datasync we were using previously had been snapped up by someone else and other hire companies that we tried, including one that does a lot of ADAT hire, extended their sympathy and cheerfully told us they were thinking, yes THINKING, about purchasing syncing devices to go with their ADATs. Luckily a JL Cooper Data Master was eventually found in some dark corner of England allowing production to proceed.

Proceed it did, right up till the ADAT had syncing problems operating against the incoming SMPTE timecode. Having already decided to use a 24-track, to lay off ALL the recorded ADAT material to, and expecting it to be a relatively easy manoeuvre, it soon turned into a nightmare as the ADAT would repeatedly misread the timecode. Solutions, albeit temporary ones, were found and the ADAT began its journey back to Australia. Sync problems, sync problems, sync problems, where will it all end?

Upon its return the ADAT was swiftly employed to make a compile master, and then copies of some tapes that had arrived. To do this, effectively, we hired in an extra ADAT and a BRC. The ERC or Big Remote Control is basically the heart of an expanded ADAT system. With its ability to synchronise up to sixteen recorders, read and generate various timecodes, take care of individual tape offsets, offer greater and more exacting autolocation functions and act as a remote for the whole setup, the BRC was proving a real winner that should have been brought into use much earlier. The BRC is enough to warm the heart of an ADAT user, it appears to relieve many idiosyncrasies related to maintaining synchronisation through third party converters.

Multiple ADATs can be synchronous with

(continued over)

adat

each other, and operate in digital, without a BRC but we needed to compile a master that was time accurate. By offsetting the second ADAT (ID #2) we could compile with a minimum of fuss, so much so it was hard to believe it was the same ADAT, and by making use of the fibre optic outputs and inputs as well as the available sync functions it was possible to end up with a 'master' and 'copies' that not only sounded identical but had exactly the same time addresses on the tape. The only weird occurrence was that if we didn't have the ADAT with the latest software version represented as the first machine in the chain (ID #1) the second machine (ID #2) would often, particularly after punch-in/ punch-out rehearsal, display 'FULL' in the display window and brattishly lock out all the tape transport functions to that recorder. If there is one thing that is unenjoyable, it surely has to be the feeling of having to switch off a unit that has a tape trapped inside, YUK! While the ADATs were in this configuration we took the opportunity to make archives of stereo mixes. By dividing the eight available tracks into pairs, over two and a half hours of material could be recorded onto a single S-VHS cartridge (4 pairs of tracks x approx. 40 minutes per cartridge).

As the audio cable termination up till this point had been exclusively via the eight analog inputs and outputs it was rather a surprise to find out just how simple it was to interconnect ADATs and the BRC. By connecting the Sync output of the BRC to the first ADAT's Sync input, using the 9 pin D-sub connectors, and repeating the connection to include the second ADAT, all synchronous activity could be initiated from the BRC. Then by connecting the fibre optic cables out of the first, into the second ADAT, out of the second and back into the first ADAT, we had, with two tiny cables, completed the termination of all 16 audio paths. The eight individual outputs, required so as to monitor the audio, were going to need twice as many cables as it had taken to gain full, internal, synchronisation and digital integrity. Another option was present to look after this concern as on the rear panel of the ADAT is a 56 pin Elco connector which can be configured in a way so ALL analog inputs and outputs can be represented as balanced lines (+4dB as opposed to -10dB at the jack sockets) and terminated using one big connector. Is that cool or what?

Since it's last official studio visit, this ADAT has been travelling around in the back of a van, still in it's roadcase, as a mobile recorder. As its new locations are often under less than ideal conditions it has been soldiering on quite well, we have witnessed a condensation or 'dew' problem that can occur if the humidity is high, and under such conditions, the machine will not attempt to operate. This can be alleviated by moving the ADAT to a less humid position, when, after a short wait, it will return to full operation, knowing it won't cause any damage

to the tape or the machine.

That, so far, is the life's work of this particular ADAT. We haven't yet performed, nor mentioned, every single function available in the Alesis system, the summaries should give you a better idea of that. The ADAT we know, and the other ADATs and ADAT equipment we used, proved to be good units, the operational software probably has a little way to go though the attractive recorder price may soften the blow of any shattered expectations.

GETTING TO KNOW YOU...

THE ADAT

As previously mentioned the ADAT is an 8-track digital multitrack recorder that can, by purchasing additional ADATs as well as some peripheral devices, be expanded upon to create a setup as large as 128 tracks. The front panel is a standard and easily recognisable array, tape transport buttons, tape counter, recording monitor selection and eight channel 15 segment LED display. All input/ output cables are terminated on the rear panel which includes analog input/ output via both jack or configurable 56 pin Elco connector (simultaneously if required), optical digital input/ output and Sync in/ out. Designed using a tape format that is written to and read by a high speed rotational drum, with 4 heads, the ADAT is able to store data on easy to handle cartridge style tapes, S-VHS cartridges in this case. Through development of internally supported software this unit is able to offer two proprietary interfaces, the ADAT Proprietary Synchronisation Interface and the ADAT Proprietary Multichannel Optical Digital Interface, both Patent Pending if you please. Having these interfaces onboard allows the user to quickly and easily expand or intergrate as connection is made elementary and the onboard smartware/software takes care of many the normal master/ slave termination details. The consensus is that even though the tape transport is a little clumsy at times, the ADAT is capable of excellent recording results and with further licensing of it's design will probably be around long enough to benefit from time proven or market-forced upgrading.

THE BRC

This is where the action really is, the BRC or Big Remote Control (as opposed to the LRC or Little Remote Control provided as an ADAT accessory) is a must for the serious ADAT user, full stop. Not only does the BRC act as a master remote control for a multiple ADAT setup it also brings to life the very reasons these products were designed in such a manner as so much more can be achieved with one of these little (or is that big?) blighters.

Normally seen as a table top or rolling stand mounted remote, the BRC is a well conceived unit with conscientious navigation and operational capabilities. The face, or top, of the BRC features selection and grouping of up to 128 tracks (4 selectable banks of 32 tracks), a clear

and decipherable hours/minutes/seconds/frames display, large keypad and transport buttons as well as access to a myriad of tape transport, synchronisation, location and editing (don't get your hopes too high) functions.

Acting as a synchronisation centre, the BRC is able to Sync up to 16 ADATs simultaneously, read/generate and display various SMPTE timecodes, input and output 48 kHz word clock and also generate Midi Timecode and Midi Clock. To permit the ADAT system to enter other realms of recording, the BRC can synchronise it's clock with incoming blackburst or composite video signal and with a little extra trouble frame accuracy can be realised. In being so well complimented with synchronisational control other third party syncing devices are soon left behind by the BRC's exclusivity to the ADAT system.

On the tape transport side of things the BRC includes auto punch in/out with Rehearsal mode, pre and post roll times, Loop play or record, individual tape offset and autolocation of up to 20 tape addresses Per Song. Per Song?! A Song, according to the BRC, is a collection of data relevant to a particular section of the tape you are recording upon. Many transport, location and sync settings may be stored, either as DATA at the beginning of the tape or as a System Exclusive file, by using Song mode.

But what did we hear you say: MORE?

Using the digital I/O routing between ADATs and surrendering these to BRC control, the system is then capable of some light digital editing such as track bouncing and copying which, as mentioned before, works well.

The inclusion of a Record X-fade function (up to 42.67ms), for improved recording and editing, time and again proved invaluable.

On and on we could list the BRC's potential so let's just say it's very good at what it does, as soon as you use one you'll want one. As soon as you want one you'll also want to win the lottery as the BIG in BRC may well refer to it's dubious price tag that soon puts an ADAT system alongside other, supposedly, less affordable digital recorders.

MORE - MORE - MORE!

Alesis AI-1 Digital Interface (\$2199). The AI-1 is used to convert digital data from Alesis's own protocol to the industry standard protocols of AES/EBU and S/DIF. Using an AI-1 lets two tracks at a time be routed out of the ADAT setup and into other digital compatible equipment. The AI-1 is also able to perform sample rate conversion.

Next is the Alesis **AI-2ES** (\$2399) which is a **Bus Protocol Interface** that allows VTR to ADAT machine synchronisation for video post production intergration of the ADAT setup.

Finally there is the Alesis **RMB Remote Meter Bridge**, (\$2499) capable of monitoring up to 32 ADAT channels at once. No doubt a very handy addition to a multiple ADAT setup.



CONCLUSION:

If you are in the market for a digital multitrack consideration should be given to Alesis's ADAT range, it is somewhat of a new, if only current, generation of recording system that borrows from existing concepts and forges ahead with new ones.

Other systems WILL and ARE challenging Alesis's forward thinking vying for their own share of the consumer dollar, and more power to them, though for the moment...The ADAT took a lickin' and kept on tickin'.

Special thanks to; Sean and Jamie Fonti of Little Boots Productions, also to; Ron Gayden and Horrie Underwood of Turrumurra Music and Michael Allen of the Electric Factory. The ADAT used by Dave Macken and his band Caugula was acquired on a commercial basis for the projects discussed in the story.

STOP PRESS

Just as we were about to cease and desist concerning the ADAT, we were able to get in touch with the jetsetting Michael Allen from the Electric Factory, (ADAT products Australian distributor) Michael was able to clear up most of the problems that we, in particular, were having with the ADAT and at the same time expressed some concern about stranded (who?) users having machine problems. It would appear efforts are being made to support the ADAT product range, going so far as to setup a 24-hour hotline, offer "free to view" to instructional video tapes, provide service centres in Sydney and Melbourne as well as desperately trying to get "free" upgrades to ADAT users. Keen!

The hicc and seek marketing approach may only prove that Alesis could have undersold their own product. -D.M.

BRC SPECIFICATION:

Song Memory:	20 Songs
Locates per Song:	20 Locates with names
Memory backup:	-- to ADAT as a Table Of Contents; -- or to Midi as a SysEx file
Sync connector:	9 pin D-sub connector (Sync-Out)
Internal clock:	48 kHz nominal.
Sync generation:	SMPTE all formats, 48kHz word clock, MIDI Time Code, MIDI Clock with song position pointer
External Sync:	SMPTE all formats, Video composite or black burst and 48 kHz word clock.
Rear panel:	SMPTE in/out- +4,-10 dB connector; -- MIDI in/out, 48 kHz in/out; -- Video in.
Dimensions:	261.5 x 432 x 101 mm
Price:	\$4700.00 retail inc tax

ADAT SPECIFICATIONS:

Recording format:	ADAT (Alesis Digital Audio Tape) rotary head digital recording S-VHS cartridge, for eight channels of digital audio.
Audio conversion:	A/D -- 16 bit linear audio, 64 times oversampling Delta Sigma single converter per channel; D/A -- 18 bit linear, single converter per channel
Sample rate:	48 kHz nominal. Variable 40.36 kHz to 50.85 kHz
Frequency response:	20 Hz to 20 kHz +/-0.5 dB
Inputs/Outputs:	Digital -- Two EIAJ fiber optic jacks; Analog -- Balanced(+4 dB): 56 pin Elco connector; Unbalanced(-10 dB): Sixteen 1/4" phone jacks; Sync -- Two 9 pin D-sub connectors
Dimensions:	127 x 483 x 356 mm
Price:	\$999.00 retail inc tax.

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Madonna

No crew interviews. No backstage pictures. No greatest hits. All the gear flown in ... and the press pay \$70 a ticket!

WHAT IS THIS?

Despite warnings from the Flick Pest Control Company that, with the termite mating season upon us, Madonna's concert might be interrupted by swarms of lusty insect, the first Sydney show went ahead as planned. The rain, which had threatened to turn the evening into a disaster, managed to hold off for the duration of the concert. As we all know, the rain gods made up for it the next day with 27mm of rain falling in just seven hours. This **ONLY JUST** triggered the rain clause in the promoters insurance policy, leading to a costly postponement being announced at 5.45pm.

The show was firmly aimed at a US television audience as it was being filmed for the American Home Box Office cable television network. As a result Madonna stuck rigidly to the set list she has taken through Europe and South America on this tour, refusing to acknowledge that Australian audiences had never seen her previous world tours. So instead of hearing her greatest hits, her fans were given half the songs off her last album *Erotica* which has been her least successful album to date. Obviously changes to such a rehearsed and programmed show would have been too difficult.

The Friday night concert was a taped rehearsal for the live broadcast that was due to be transmitted from Saturday nights show. The live broadcast was due to go to Home Box Office in New York who were also going to retransmit it to Europe ten hours later. When the show was cancelled at 5.45pm on the Saturday the tapes were rushed to Apocalypse studios where the tapes were edited and prepared for transmission. There was not enough time for much post production so it could be argued that the final TV show was almost live. The only real changes were to bad camera switches and Madonna was apparently very happy with the results.

Grant Shanks of Apocalypse said that the timing was very hectic. "Madonna arrived at Apocalypse about 6.30pm on Saturday and they started editing around 7pm," he told me. "I got there by 9pm and they were well into the first reel. I went upstairs to cut the opener and by 2am we had finished the first reel. By 7am the second reel was finished so it was real panic stuff. At the same time they were mixing the sound in the Metropolis truck down at the show ground. We were doing the vision in one place whilst the sound was done in another, then we put the DAT tape and the D2 master together and sent it by satellite."

Grant also saw the show. "I really enjoyed the show but the poor people at the back might not have seen much even though the video screens were good. I had a good walk around the SCG and, sound wise, it was really good right at the back but at the front it was a bit 'topy'. In the middle, right up the VIP side, it was rather 'boomy'. Overall the sound was really well mixed and came out fantastic on the video. The precision with which the show ran was amazing and I think the only problem was in the last song when a piece of scenery came down and cut a camera cable."

With the feverish hype that proceeded the Madonna concert, it was inevitable that the actual live performance was not going to compare to the media build up. The reaction from those I surveyed was variable. Most were fairly impressed with the theatrical element of the show but not the lighting or sound in particular. Remember, Connections couldn't attend the Saturday show, for which two 'press' tickets were purchased at a cost of \$70 each. The tix had 'Complimentary \$0.00' on them, but of course this show was postponed till after deadline. So we asked everyone else who went!

Lighting designer Peter Morse is well respected for his work with acts such as Lionel

Richie, Michael Bolton, Michael Jackson, Julio Iglesias and the previous Madonna tours *Who's That Girl* and *Blond Ambition*. By the time the show had reached Australia Peter was no longer with the tour, leaving the lighting directing to Chas Herrington, known for his work as *Dire Straits' LD*. I requested an interview with Mr Herrington but he politely informed me that he had signed a contract forbidding him to talk to the press and so could not oblige. This seemed a bit ridiculous, Connections is hardly *The National Enquirer* although if Julius had his way.....

If you're a moving light fanatic then this was the show to see. Not only were there Telescans and a Morpheus Pan Command system but Vari*lites and the relatively new LSD Icons were added for the shoot. Colin Baldwin of Showcorp described the stage area as looking like a moving light convention!

"The thing that sticks in my mind, viewing from the Brewangle stand, was the look of the stadium before Madonna came on stage," Colin said. "The Skytracker and Moontracker beams piercing through the smoke was amazing but that was only put in there for the HBO broadcast. The stage lighting was pretty average. You have to be a hardened Madonna fan to really get off on her but then I saw the Michael Jackson concert (again Peter Morse designed the lighting) on TV the next night and I thought Michael Jackson on television was twice as good as Madonna live!"

"From a production point of view there were no real highlights in the Madonna show, you were constantly waiting for something big to happen. The staging and lighting with Michael Jackson looked fabulous. It looked like Peter Morse had a lot more freedom with Michael Jackson than with Madonna. I got the feeling he had held back with her. From a lighting designers point of view it was interesting

watching all those brands of moving lights competing against each other. I found the sound good although it was very odd watching the visuals on the screen which were a good second out from the sound! After the show Swampy showed me around the stage which was excellent and there was 21 tonnes of equipment in the first 20ft of the roof. The Icons are funny looking things, pointy at the front - in fact they look a bit like that spaceship from Star Wars!"

I managed a quick conversation with Dennis Varian from LSD USA who is in Australia looking after the Icons on both Madonnas and U2s concerts. Dennis had to make sure the 30 Icons ran smoothly and he claims there were no problem. The Icons are used in conjunction with the Xenon Skytrackers, mainly to shoot beams through the air for the cameras to pick up. The two main features the Icon has which other lights do not, are zoom optics - so they can go from a very small tight beam of about 1 degree all the way out to a 40 degree floodlight controllable from the console - and up to fourteen gobos, seven of which can be rotated. Dennis admitted that with all the different lights to be controlled there were quite a few people on the control tower!

"The operator for the Icons actually operated the Vari*lites as well, controlling both desks at once," Dennis told me.

The stage itself had a scaffold structure at the back which was manually pushed forward for various sequences and cut into the back wall were separate windows which opened and closed to different dance scenes (a similar idea to that used on David Bowie's Glass Spider Tour?). There were many backdrops and scrims giving a myriad of looks. Most notable were the Austrian curtains that tracked around the stage giving a vaudeville appearance to the show. There were quite a number of 'backlines' to the stage giving a variety of depth. One journalist described the show as 'more of an exaggerated RSL cabaret night than a rock show'.

"I found the 'checker board' drop really interesting," said Peter Rooney, of Jands/Vari*Lite Australia. "She does this solo performance in front of it with a followspot behind her coming from upstage right corner which is only about 20ft away. The windows that appear and disappear are really clear, framed completely by black. My first impression was that it was really awesome. Nearly every song was a musical with her playing different characters and that must exhaust her. She must be the most together female artist and the hardest working. It was a fantastic show and a hell of a lot of work has gone into it."

Peter Rooney insists the lighting never took second place to the staging although he ad-

mits Madonna could sometimes get lost if you were looking at the big picture.

On-stage lighting consisted of the Pan Command system, Telescans, four VL4s, 20 VL2bs and 64 ACLs. There were also fifteen VL2cs on either PA wing.

Apparently sight lines were fairly good at the SCG although most fans had to watch the two giant video screens flanking the stage to see anything of their idol. Those seated on the oval lost sight when the star descended onto the catwalk at front. The southern end of SCG drops away about 4ft so if you were standing at that end you could not see over the middle of the ground. This meant the headline was the top of the stage!

Louise Brennan of Concert Light Systems paid \$250 to see Madonna play in Melbourne and, as CLS own a Morpheus Pan Command system, she was particularly interested in the show. (We heard of CLS being called on for Morpheus support, despite the system having been entirely flown in with all the touring gear. Aussie input was minimal for this tour).

"We were ten rows from the front so the sound was really good with no reverb," she told me. "Up in the southern stand it would have been terrible. The lighting was fantastic. The show was very rehearsed and choreographed right down to the last word, very professional. I went there expecting it to be a theatrical type of event and it was - huge lighting, huge staging and costumes. It was a bit like Phantom of the Opera actually! I think it made the show a lot better."

"With the lighting they had PC Spots, Pader Beams and PC Beams. We went on the stage afterwards for a look at the rig which was a lot smaller than you'd expect from the front of house. Apart from the chandeliers, mirrorballs and other props, the rig itself was quite compact. It was basically a rectangular rig with prerig trussing and down the side there were lighting ladders with bars of sixteen Colourfaders. Also down the side were heaps of Dataflash which were really good and bright."

"What got me were the curtains they had, they really impressed me particularly the chequer curtain which also came down each side to give a box effect. They had UVs on it at the same time so when Madonna came out with her dancers all dressed in black and white, it looked really good. There was also the silver tinsel curtain and another lighting curtain that may have been fibreoptic."

"I didn't realise there were Telescans until after the show although I knew they were something big. I only actually saw about four, they fitted in well with the Pan Command. There were also a lot of Colour faders and XL Rangers, the big colour scrollers on moveable 5K lights. I was really surprised at how well the

rig was designed and it was worked to it's maximum potential."

Paula Martinez, also from CLS, felt that Madonna sang with a backing tape at certain times, a view shared by Sarah 'Chook' Grafton who saw the show and complained that vocal levels varied depending on whether a hand held radio mic or headset mic was in use. Chook had central seating in line with the mixing island.

Paula said: "Above the stage was a 'GIRLIE SHOW' sign lit up with fibre optics, while the rest of the stage was dressed with many effective lights, including numerous mirrorballs or various sizes. These gave an impressive delicate touch of mirror reflections on stage. A dancer opened the show sliding down a rope - wearing nothing more than a G-String - I thought the boys were going to turn into maniacs! It was good to see that her dancing was well respected."

"The choreography and professionalism of the dancers and back vocalists was immense. Throughout the show there were numerous costume changes which provided each song with the right mood for the particular number".

Sound was mixed by veteran Clair Brothers engineer James 'Trip' Khalaf, though an S4 system, about which we know very little. *

-Catriona Forcer

EDITOR SAYS: I had a chance airport encounter with assistant tour manager John Pope who was waiting with Frontier Touring Finance Director Phillip Jacobsen for the Madonna Lawyer. This was at the start of the tour, on November 17th, at 10pm. The Lawyer was on QF108, the non-stop non smoker from LA, travelling first class.

Jacobsen said that major acts always have their lawyer on hand in case of problems, and it was Frontier company policy to meet them at the airport. I suggested they should have just sent driver Ray Arnold - and it turned out he was there too - so there was a welcoming party of three. For a lawyer.

Old Ray Arnold I then ran into again weeks later, and he was having fun with the media following him around while he drove Michael Chugg's Mercedes. It seems one press team actually mixed up Arnold for Chugg, while another spent the night outside Arnold's place, thinking perhaps he had Madonna in there with him! (What a mind picture!)

We'd have loved to have brought you more of a story, dear readers, and in the end we've had to work harder ringing around the country than if the ladies crew had co-operated! The big secret is -- we don't know what it is!

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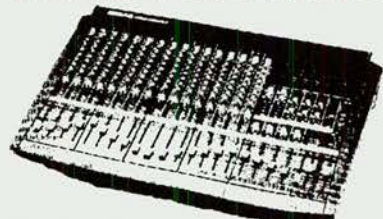
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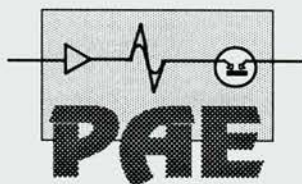
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When not writing books or offending our dear readers, Duncan is also a Director at the 'New Look' ARX in Melbourne.

A Christmas Tale

Duncan Fry talks about Christmas Past, when Colin Park sent him off to do a simple gig! Of course it wasn't



Roses are red, violets are bluish, if it wasn't for Christmas, we'd all be Jewish! Christmas comes but once a year, and most people would quite correctly say: "Thank Christ!" Indeed, who else would you thank? Wasn't it the man himself who said "And there shall come a great profit throughout the land." Or was that prophet? Truly it is easier for a camel to pass through the eye of a needle than for a two man road crew to carry a concert PA system up 4 flights of stairs! (*Enough with the Biblical references, already. Get on with it.Ed*)

I did a Christmas Eve gig once at the old Greyhound Hotel in Richmond (an inner Melbourne suburb). This was before they called it Benson's, painted it the trendy colour of the month and put blinds made of Crunchie wrappers over the windows!

Originally I didn't have a gig that night, and was planning on spending the evening watching TV, but Colin from Park Audio (we're talking pre-ARX days here), who had the gig originally, dangled the carrot of easy money in front of me.

"All you have to do is a walk-in mix for the band," he said. "It'll be money for nothing. I'll set everything up in the afternoon; all you'll have to do is mic up the band and let it rip." "Who's the band?" I asked. Col consulted his work diary. "It's Dicky Moron and the Rude Boys!" he said (No kidding - that was their name. I still have a souvenir poster to prove it!). "They play ska, funk and reggae. You'll love it."

Actually I loved the thought of the easy money better, but since I only lived in the next suburb, a couple of kilometers down the road from the gig, and like the warm hearted, believing fool that I am, I said OK.

The gig was due to start at 9.30pm Christmas Eve, so I decided to get there about 8.30 just to be on the safe side. As I drove down the road I could hear the noise from about a kilometre away. Pulling up in the truck (I had no

car) I could see that the place was jammed and people were spilling out into the street. At least there's a good crowd, I thought.

I squeezed through the door and made my way inside. It was chaos, and what's more, as far as I could see, it was chaos without a PA system!

Pushing and shoving through the well oiled crowd to the stage, I found the PA stacked up in the far corner of the room, still packed in its road cases. What made it worse was that the band had set themselves up on stage already.

As anyone who has done PA work will agree, there's nothing worse than trying to put the system together with the band on the stage. Everything possible is in the way. There's guitar pedals, amps, drums, all set up where you least want them, and all the players tuning up and loosening up. A real shitfight, in fact. The sort of thing that you may get away with it on a large stage, without the audience, but this was a tiny club stage totally filled with a seven or eight piece band, and a sea of expectant faces jammed up to the stage waiting for the band to start.

Well, I had to leave the boxes where they were, since there was no where else to put them, plugged them up, and set up the rest of the system like a man possessed. Bitter experience had taught me that audiences can get pretty snakey if nothing comes out of the PA when the band starts!

Amazingly everything was put together in

time. No EQing, very basic monitors, but at least everything that was supposed to have a microphone in front of it had one. When the band started, the place went wild and any thoughts of fine tuning the sound went out the window. I just kept it as loud as I could and left it at that.

The gig turned out well. The band was happy, the crowd was happier, the pub was happiest because everyone was totally pissed rotten. When Col came to pick up the system at the end of the night, I was having such a good time (tired and emotional? Ed) that I forgot to berate him for the PA not being set up. I rarely drank at gigs, but there was so much alcohol and the earthy aroma of giggle cigarettes that I had been breath tested on the way home I would have pleaded 'passive drinking' as the cause!

Another Christmas Eve I was driving home from the factory in the truck after Christmas Drinks.. Halfway through trendy Malvern I was seized with an uncollapsible urge to have a leak. I was desperate - what could I do?

I found an empty 4 litre oil container in the cab, and the old Toyota F series truck has high off the ground with its 20" wheels, so I started to fill it up. Aaaaah- the feeling!

All of a sudden my sixth sense made me look over my shoulder out the window, where I see a tram load of christmas shoppers staring in at me & the oil container!

I screwed the lid on tight and forgot about it. Next week the crew used the 'oil'!

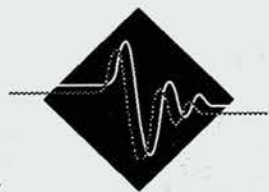
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It's Time - part 2

By Glenn Leembruggen*

Last Saturday night, I was at a Sydney pub which is well known for its live music. The band was a successful covers outfit, playing exact replicas of the songs of one of rock music's pioneer groups. Their music and the act were excellent, but the sound was crook. While the mix between instruments and vocals could have been improved to sound more like the record, the main problem where I was seated was with the sound of the vocals. As vocals form the essence of this band's music, this really mattered. Over the range of songs and singers, the tonal balance of the vocals varied between thick and thin, empty and harsh, in short it was unnatural. The cause was not the eq. given to the sound by the mixing engineer, it was something more fundamental- the set-up of the loudspeakers.

On one side of the room were two speakers- located side by side. Now the boxes were trapezoidal types, and the boxes were splayed according to angle of the sides, and I guess that the angle between the axes of the horns was about 30 degrees. The reason why the vocal sound was so poor was that it was full of phase cancellations at frequencies of 500 Hz upward. These phase cancellations were of course, caused by the orientation of the speakers. The boxes seemed to be up-market types and would have had either 90 degree or 60 degree horns.

If the horn was a 90 degree type, it would have provided ample coverage of the audience on this side of the stage and as the sound was not loud, there was no need for two boxes on this side. If it was a 60 degree type, then perhaps two boxes may have been required for coverage, but they should have been located so that the angle between the horn axes was 60 degrees.

Either way, it would have sounded a whole heap better if one of the boxes was turned off, and the other box aimed appropriately. Try it for yourself.

When is the industry going to accept that comb filters are an acoustic reality which affect everybody, from the punters to the consultants!

In the interest of musical passion, it is time that the industry (consultants included) embraced and considered the theory of sound, and not just think it relates

to the writers of magazine sound articles or text books.

Phase cancellations always occur when two or more loudspeakers whose radiation patterns overlap are located side by side. In general, their impact is more noticeable on vocals than instruments, and of course vocals are what people mostly relate to. The accompanying graph (given in our article about phase in April '93 Connections) shows the effect of standing 10 m back and at 30 degrees from two ideal speakers placed 300 mm apart. You can see the vocal quality is sucked right out.

The splayed sides on loudspeaker cabinets are principally there for looks and also for when large arrays of the cabinets are flown. When only two boxes are to be located side by side, the angle between them must be the same as the horizontal beamwidth of the horns. One US speaker manufacturer has recently seen the light and released a box with a 45 degree horn, and guess what, the boxes have 22.5 degree sides. In a side by side arrangement of these boxes, the phase cancellations are significantly reduced, and the difference is definitely audible.

The future of high quality live sound now lies in the domain of time. It is the time sequence of the arrivals from each source of sound which determine so many things we hear; things that range from the radiation patterns with multiple speakers, the resulting frequency response at each listener's ears right through to source localisation. It all depends on the arrival time.

We've moved beyond the struggle in the frequency domain to get high SPL reproduction of frequencies between 30 and 15 kHz. Boxes and transducers are now pretty good in general and can meet these frequency de-

mands. Future significant improvements in the frequency response of systems can really only come from the industry embracing the time domain. Don't just let the latest software predict it for you. Most software uses only octave band analysis, and hence will only show the some effects of phase cancellations.

◆ Next month, we are expanding this column to include questions and comments from you people out there. Send us via the editor (letter or fax) your questions or comments about sound, sound systems, loudspeakers and acoustics. We'll cover areas relating to the set-up and configuration of systems, aspects of acoustic and electro-acoustic theory, your observations of sound and general advice about loudspeakers and acoustics.

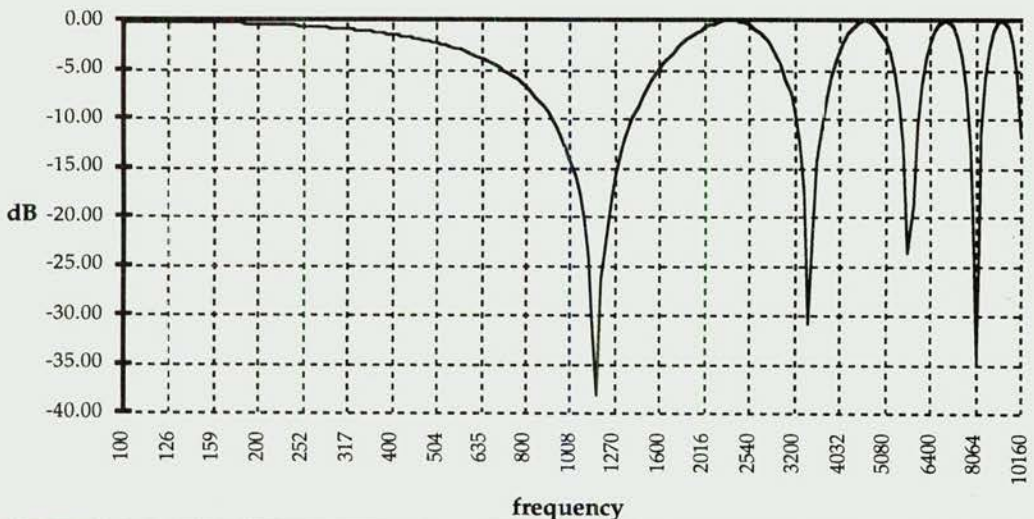
While we don't wish to delve into product comparisons, we are happy to discuss the application or design of a particular product.

We've heard lots of complaints about Consultants. For example, consultants blaming the contractor for poor sounding systems when they specified the equipment and locations; (we've heard of this, and would like to expose at least one famous 'Consultant' -Ed), tender specs that made no sense so that you needed to re-design the system from scratch; asking for the world in the tender, and when the job is underway relaxing some of the requirements that some tenderers took seriously while others didn't.

Over the years, we have become aware about how little the industry respects consultants. The vibe of the last AES convention was really down on consultants and their competency. Its time for the situation to change so that the industry as a whole all can win.

*Glenn runs Elecoustics: (02) 799-6742.

Effect of standing at 10 m at 30° to two speakers spaced 300mm apart.



ZOO



*Julius Grafton talks with possibly the most influential man in live touring sound today - about the sound that is U2. **Warning:** there is a lot of P.A. equipment talk herein!*

A REAL JOE.

U2's genial but grossly bearded sound engineer Joe O'Herlihy is possibly the most influential person in the live sound industry. "I was looking at the MT-4 (*Electro Voice Manifold technology speaker system*) before the Joshua Tree tour, and as soon as I indicated that, Clair Brothers got interested in flying the S4's outdoors!" Joe isn't having a war-k either, this is one level headed Irishman whose been continually in the employ of U2 for fifteen (yup, 1-5) years. "I'm very comfortable on board while there is a ship there!" he jokes. Going back to the S4's, Joe takes up the story.

"Outdoor PA's were always stacked, and it took a lot of time and knocked your crew around. I wanted to fly the PA from each side of stage, but the S4 system couldn't be hung in huge columns". Clair Brothers redesigned to accommodate Joe, with structural changes to the box incorporated in the S4 Mark II version. "Now we can fly 144 S4's in two and a half hours", Joe says.

Given the ability to fly the system outdoors, Clair Brothers maintained the U2 account for another tour - and it's a coveted account indeed. Two years touring the largest PA system in stock equals big business! "After Joshua Tree,

bands would ring Clair and say; 'I'll have the U2 system, thanks!'"

While the S4 composite loudspeaker cabinet, on which Clair base their business, has been around for nearly 20 years or so, improvements in components have been made when JBL come up with newer technologies, like the current V.G.C. (Vented Gap Cooled) loudspeakers. This along with new crossover technology has kept the front loaded 200kg boxes sounding contemporary.

Here in Australia U2 hired the 144 S4's with amplification and flying for their shows from Jands, who also have updated their flying steel

“ Hardware...	Software...
and....	” Menswear! -Bono.

in recent times. The tour went like clockwork, according to Production Manager Jake Kennedy, except for a semi falling over near the new rural residence of our Catriona Forcer on the northern outskirts of Sydney. "We lost nine S4's", said Jake, "the front of the trailer peeled back, there was aluminium everywhere. The most important thing was that there was no injury to the driver. Jands had to fly in another nine from Singapore, which arrived just in time for the shows". Jands have an S4 system based in Singapore, nine hours flying time north of Sydney.

On the subject of speakers, Joe was the first person to tour a new Clair Brothers cabinet, originally named the P4, but quickly renamed 'Piston' by Joe. These are almost totally trapezoidal, tapering to just an inch or so thick at the rear, and just wide enough at the front to accommodate three 12" speakers and a horn. "I walked in and the main thing was the incredible clarity and devastating bottom end", Joe enthused. 24 Pistons made the trip down under, along with everything else in the sound system. They were used as front fill along the ground.

PARAGON CONSOLE: Joe managed to entice Clair Brothers into purchasing a new console at the start of the tour, called the ATI Paragon. This is the console type on which ex-pat Shane Morris is now engaged in updating, and it features onboard dynamics. This means every input channel has a noise gate and compressor limiter, thus negating the need for a rack full of these outboard.

Each Paragon channel boasts 16 auxiliary sends, individually switchable pre or post fader, with on/off switching. EQ is four band fully parametric with adjustable Q and 16dB cut or



Joe O'Herlihy in work mode. The new ATI Paragon console with a noise gate and compressor on each channel is joined by the original Clair Bros. 'Classic' on Joe's left.

boost. "Very transparent EQ" says Joe.

The Paragon has forty mono inputs, plus sixteen subgroups double as 8 stereo or 16 mono inputs. Then there are eight stereo VCA masters with a Master, the first console to do this at the time. Some of the Paragon features have since turned up on Soundcraft's largest console, the Europa.

Four discrete stereo mix outputs, four mono mix outputs, and as many inserts and patching possibilities as you can think of round off the Paragon. "It's very sensible, that's my way to describe it, very user friendly. It's got a big, chunky old style look with broad channels. You don't have your fingers interfering (with adjacent channels) like on a Gamble". Amen.

ATTITUDE: The U2 crew are a long serving team, and no bullshit is tolerated. "I've strived my entire fucking working life to get rid of the bullshit which is part and parcel (of this industry)", said Joe. "We don't allow a chip on the shoulder attitude, and we get a lot more done".

This shows in the relaxed but efficient show

vibe on this tour, quite 100% opposed to the Madonna tour, to which Connections could not gain direct access because of the crew being contracted not to do interviews.

In another interview Joe told of how the band communicate with the crew, by appointing a spokesman. This followed some communication difficulties where Bono would punk out if his message didn't get across. This is part of the process of touring and getting to relax on a daily basis with an extended family of 228 people!

BAND IN FRONT OF THE PA! In fact, the whole show is way in front. Bono's mic stand is 42' in front, and the band 30' in front. "The sound on stage could be best described as 'weird'", says Joe, and it took the band some getting used to.

When the band perform from the 'B stage', they are a whopping 128' in front, where the time domain means that sound from the main speaker stacks hits them well after they've made or uttered the same sound! The delay here is as much as a half second or so, a virtual eternity in audio terms!

The front 'B' stage couldn't be used without 'In Ear' monitors from the Radio Station, which took a while for the band to get used to. "My biggest concern was feedback" states Joe, which shouldn't confuse you. Feedback from a microphone to a monitor planted firmly in your ear is virtually impossible, but feedback from an adjacent conventional send isn't. When feedback strikes your eardrum at a distance of about 2mm, it could cause huge damage. Thus the monitor system needed heavy protection by way of Dominator limiters on each send.

"You can't just arrive one day, take it (an in-ear, wireless monitor system) out of the box and just use

it", Joe says.

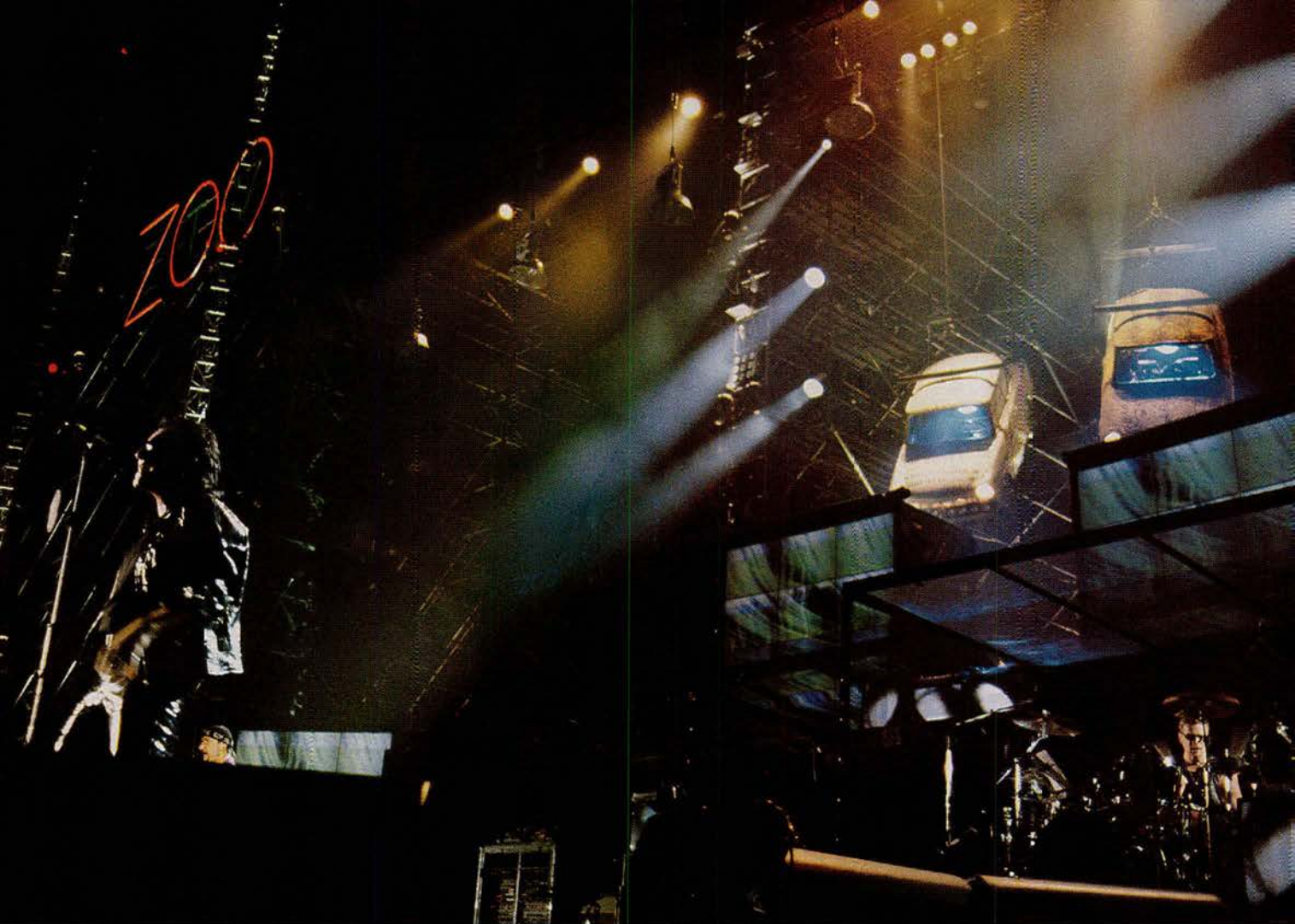
MONITORS. Under the U2 stage is The Underworld. Two unfortunate monitor engineers lurk down here, where the noise can be best described as 'post industrial meets battlefield'. Two engineers each work two Ramsa WRS 840 consoles, which amounts to serious foldback.

Each band member is sent a stereo mix 'direct' into the Radio Station wireless ear monitors, then there are monitor wedge positions everywhere - because the members move about a lot. Thus a complex joystick arrangement allows the two engineers Vish Wadi and Dave Skaff the ability to whizz each mix to a different position as needed.

With up to 32 mixes EACH, these two engineers each look after two band members who they cannot see because they are down there, in the Underworld. Video monitors are used, and the whole thing would have taken quite some time to get used to.

EFFECTS. (AND THE KITCHEN SINK). Two

(continued)



ZOO sound

Eventide H3000 Harmonisers, four Yamaha SMX 1000 and a Lexicon 480L are the main devices at Joe's fingertips. Then there are 3 PCM 70's, two with V. 2.0 and one with V 3.0 software.

Aside from the previously described Paragon console, there is also a Clair Classic console, for extra inputs like when the band play from the 'B' stage. This has just four auxiliary sends, feeding effects. There are also a multitude of BSS noise gates inserted into this aging console, showing the space and cable saving idea of onboard gates and limiters, as used in the Paragon.

Some Rane processing and distribution are also used for distribution of various mixes and sources to the video team.

AIRPLANES. The last production semi departed Sydney Football Stadium at 3am on Sunday 28th November for the fifteen minute road trip to Sydney Airport. Two 747 freighters, each capable of uplifting 350 tonnes, were loaded for the flight to Christchurch, a process that took until midday.

Two crew from each department were rostered on at the airport to cross load the aircraft, which comprised supervising the unloading and palletising of each truck. Once departed Sydney, the aircraft tracked direct

for Christchurch, a three hour and 10 minute flight via the main oceanic airway. Upon arrival a fleet of semi's were then loaded by an army of loaders, again supervised by U2 crew, who identified each pallet and directed it to the correct semi pan.

The U2 crew and tour party, numbering 228 people, departed Sydney on Monday 29th November, aboard a charter flight for New Zealand. Two dates in Japan would conclude this tow year tour.

"After Tokyo the TV will be turned off. We'll have a sabbatical for at least six months. Then we'll start again!"

No rest for the wicked! ●

Sydney Football Stadium has the **worst acoustics** of almost any place on earth. The curved sweeping roof provides multiple slap echo's to the extent patrons seated anywhere except directly in front of the stage suffer almost nil intelligibility. It should never be used for live music again, and questions need to be answered about why U2 were presented there in the first place. It certainly was a *visual* treat, and TV viewers in the USA and Europe would appreciate the visuals and enjoy direct mixed sound. Shame about the other 45,000 paying punters however. Still, they enjoyed it JG.

U2 LX

Catriona Forcer revisits the U2 tour to see what has changed since she last saw it in the USA...

The U2 Zoomerang tour finally made it to Australia after 20 months touring the world in one form and another. With it came 31 trucks carrying 240 tonnes of production (30 tonnes alone of sound equipment) and 750 tonnes of steel.

Zoo TV is about humour and satire although I think this may have been lost on many of the audience. The idea for Zoo TV evolved when the band decided they needed a new approach to touring before they became a complete parody of themselves. It was a time when the band were beginning to see the rock'n'roll dream as ridiculous. Even American college students were writing their degree thesis on the politics of the band. The band that was once itself overblown and self important has, by way of Zoo TV, sent itself up and challenged the traditional rock show.

Lighting designer Peter Williams, or Willie as he prefers to be known, has worked with U2

on several tours and with Zoo TV he has striven to reflect humour in the lighting.

"The album Zoo TV is basically made up of tortured love songs but there's a lot more humour in it and it's lighter," said Willie. "The band's mood is completely different. It's a mixture of great emotional intensity and completely unhinged behaviour."

The tour began in the States, March 1993 playing indoor arenas. The lighting rig was fairly minimal with most of the backlight coming from the four 8sq ft Vidiwalls. In fact the first two numbers were really only lit by the Vidiwalls. The lighting rig had about 200 par cans and 17 followspots. Willie admits to having a passion for followspots achieving a massive 31 of them on the 'Rattle & Hum' tour. The stage was also littered with 36 28" television monitors. The show then moved to outdoor venues and the general theme continued although the show grew bigger.

Willie never uses Vari*lites although he thinks they are fantastic instruments. He believes that very few people really know how to use them and consequently shows all end up looking the same. Willie prefers to use the followspots in a big way which gives him the variability of moving lights. Also, by not using Vari*lites, he finds he is forced to be more creative hence the Trabants or 'communist Vari*lites' as they became known.

Willie attributes many of his influences to the Dada and Surrealist periods of modern art and he loves to 'make something into something else' after Marcel Duchamp.

"On previous tours I've always enjoyed making lights out of objects," explained Willie. "It started with the bucket lamp, progressed to the dustbins and then moved to the legendary handbag lamp. On Bowie's 'Sound & Vision' tour I got into collecting things like chairs and pieces of air-conditioning to hang from the truss. I thought of the cars because the album Zoo TV was recorded in Berlin which is now full of Trabants and the band got quite fond of them, even bringing a couple back to Dublin."

Willie figured out that if he took everything out of the car he would be left with an empty shell which would make an ideal lighting instrument. Although he was confident that the cars would look good as an item on the truss, he admits being surprised that they work really well as lighting fixture.

"I spent a year designing this thing and then a two years on the road with it," Willie said. "It has continually changed and grown, with new things arriving on a daily basis and old things going away. We just followed our instincts on how we should pitch the shows at different territories. The indoor shows were a question of feeling what this was about and

feeling the potential. As it was a brief and fast tour we just got a sense of what this could be. For the American outdoor shows we had a very ambitious and extraordinary stage set designed by Fisher Park. Some of the physical structure was colossal. We had a giant radio pylon 180ft high and masses of stuff. It one sense it proved to be too big and so for Europe and Australia we simplified the physical structure. The technological end is vastly more complex than it was, the video system we have this year makes last years look like something you could buy from a store. Here we are now in Sydney making a definitive document of what's been happening on this tour and what's interesting is that normally when a video crew come in to do a show it's a real intrusion and you have to rethink everything. But for us it's just been another

"There's a tension between trying to capture the cyberelectricity of the show as it is, letting the video provide the images and do the work, and letting the TV audience understand that you are in a big stadium show."

a good time but last night was really the rehearsal for tonight's live broadcast. There is a really interesting tension when you're doing a big shoot like this because there are three key people. Obviously there's the band themselves and the way they want to look as human beings, there's the director (Allen Branton) who wants to get the great picture

and the lighting people who want it to look a certain way. Everyone is trying to make as what they perceive as the best pictures but they have different perceptions. The difference in perceptions is where the interesting tension lies. There's a tension between trying to capture the cyberelectricity of the show as it is, letting the video provide the images and do the work, and letting the TV audience understand that you are in a big stadium show. In the rehearsal we were definitely leaning to-



step in the madness. We already have cameras, camera tracks, dollies and booms recording people so we've just got a lot more of it. It's wonderful to record it properly but very much true to the spirit of the thing. We have this cyberstadium contrast. Stadium struggle against the technology in a way and of course this show is more about abusing the technology than anything else. The result here is a tension between the crass stadium end of things, which in some ways is inevitable just because of the scale, but also trying to keep it within the ball park of where we started.

Last night was absolutely bizarre. I was seeing camera angles I'd never seen before and we had a lot more audience lighting. It just felt so big. And of course we had another bass player which just pushed things into the realm of the totally surreal. I know the audience had

wards the stadium size and if we're going to make a mistake, I'd rather err in the opposite direction because it might not look as great as we might like."

The original lighting system was almost entirely composed of the trabant cars, retrofitted with 2.5k HMIs, but most of them were gone by the time the show came to Sydney. This was mainly because most had fallen to pieces after being on the road for two years. Also, with more money to spend, the video technology was improved rather than the physical staging. Willie was prepared not to bring any trabants but the band wanted a couple as a token gesture. In one sense Willie has returned to a followspot heavy show (22 in all) which he believes works best for U2. The rest of the lighting is architectural lighting for lighting the structure.

(continued)



joined U2 onstage, underneath the mirrorball trabant (unfortunately not seen in Sydney), to perform 'Dancing Queen'. U2 and Abba underneath a mirrorball trabant singing 'Dancing Queen' and being broadcast live to a living room in Nottingham - I knew this was the greatest moment of my career."

The controversial link up with Sarajevo was also a time Willie will never forget. For quite a long period in the tour, three minutes of each show was devoted to ordinary people from Sarajevo to say what they wanted. Some nights Willie found it almost impossible to function during the following song. Willie is looking forward to going home and 'getting a life'.

"I need to really digest all of this and see where to go from here," he said. "I'd like to do something small

and interesting. The big tours are great, to be in control of the Starship Enterprise is, to be honest, great for your ego. You can achieve so much in a small space with so little and it comes back to my minimalist roots really."

There are only three original members of the lighting crew left since the tour began including Firmin Moriarty, who has earned the title of 'Head Trabant Boy' in the itinerary. I asked Firmin what has been the most memorable show, for him, so far in the tour.

"Definitely last night's show (the first U2 show in Sydney)," he replied. "As far as I know it was the first time U2 have played without one of it's members (Adam Clayton had been apparently struck down by a mystery virus). At first we thought it was a wind up but it wasn't. The bass tech, Stuart, took his place and the crew loved it. I've never known such a cynical and blase crew to be so impressed and forthright with praise and admiration for him going up there. Also we had the film crew here so there were at least six people operating lighting desks out front. Hence the technical channel on the intercom was chaotic not the usual calm, jovial talk.

The shows we played outdoors in America were vast, we had up to 14 Trabants at one point. We had a giant radio mast in front of the

stage and cherry-pickers with Trabants on them. The first couple of weeks are memorable just because of the long hours and getting over the logistical and technical challenges. After a couple of months we scaled things down a bit, losing the radio mast which was very expensive to put up. The crew were pretty relieved as it was a lot of work but it did look good. We lost the cherry-pickers when we got to Europe again an accountancy decision and they took up a lot of truck space. The theme continued but the show was stripped down so it was very clean and not so chaotic."

In the States projection screens were used outdoors which were later replaced by the Digiwalls.

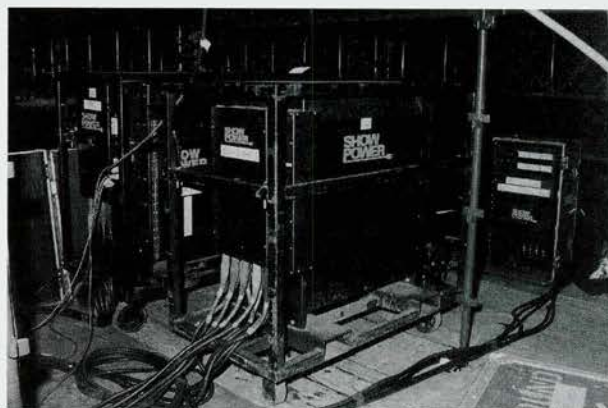
"I think that was a good move as the clarity really improved," said Firmin. "Mind you it was an expensive move. The show here is slightly different with the steel that is used to build the staging system being a little more simplified due to where we are and what is available. We do have the same amount of lights in roughly the same place though."

The shows we played outdoors in America were vast, we had up to 14 Trabants at one point. We had a giant radio mast in front of the stage and cherry-pickers with Trabants on them.

As the tour was finishing in Europe last August, the band released another album Zooropa and songs from that were incorporated into the show.

"The show's changed a bit because of that," said Firmin. "But that's good for the crew as we don't get bored with the same songs. A lot of people think I just put the Trabants up but I

don't even do that! I do operate their movement during the show but I also take care of other things. The worst gig we did was at the end of the indoor run of Europe which was in Manchester. We had a lot of problems that night including the cars motor movement which was computer controlled. It had been working really well up until then when it suddenly decided it had enough. But as it was the last show we didn't have to talk about it the



"I use a lot of outdoor fixtures because there is no roof - sodium fixtures, quartz fixtures and metal halo fixtures - just to give the staging a real presence," said Willie. "They've been good because they're made to be outdoors. The great thing about this tour is to put a show together where you're getting the bulk of the visuals from video rather than lighting. Most rock bands go out with a 'light show' and, for me, the concept of a light show is such a hilariously Victorian thing. It just seems peculiar to me that bands go out and their primary visual is a light show. Video is a much more contemporary thing and lighting wise I can just get on with making the band members look good and the structure interesting. There's a lot of light because it's a very big structure but it's very, very simple. Some of the most effective looks are from 100watt light bulbs. You have to be quite judicious about it but it's not complex."

The stage also housed 36 TV monitors, the three giant Digiwall screens, four Vidiwall screens, radio masts 34 metres high and a satellite dish. The Vidiwalls were actually purchased by the band at the beginning of the tour because no rental company could afford to own that sort of equipment.

The greatest moment of Willie's entire career was the show they played in Stockholm, Sweden which was again a live broadcast. In the UK a competition was run to win that live broadcast to your own television only.

"A guy who lived in Nottingham got it broadcast to his house and the entire street was in his house," laughed Willie. "We had a camera in his house sending back live pictures of this living room crammed with pissed people. Bono would talk to them and they would reply. It was deeply surreal. Being in Stockholm Benny and Bjorg from Abba showed up and they

next day!"

The lighting crew numbered seven for the indoors shows, thirteen for the outdoor American shows and twelve in Sydney. Through the tour there have been 33 different lighting technicians at some time or another. The main turnover has been because they've moved continents and not taken everyone with them but there have been a few who have been sacked, injured or left for personal reasons. In fact Firmin has a list of them written on the side of their lamp bar dolly! The overall crew numbered a massive 220 people.

"It's a good team and 'team' is the word," said Firmin. "I'm going to miss everyone when it's over as two years is a long time. It's been interesting seeing how people have lived during the two years, how they've changed and how they've coped with situations that have come up."

Originally the crew were scheduled for three days off in Sydney but because of the film shoot that was curtailed. The production was loaded in early so the film lights could come in the next day and the crew had to be on stand-by for the video director. Obviously the steel goes in first and that took nearly two days to set up in Sydney. Production usually comes in at noon, the day before the show and is usually finished by ten the next morning, although that's not working straight through. Lighting goes in about 4pm and is focused by

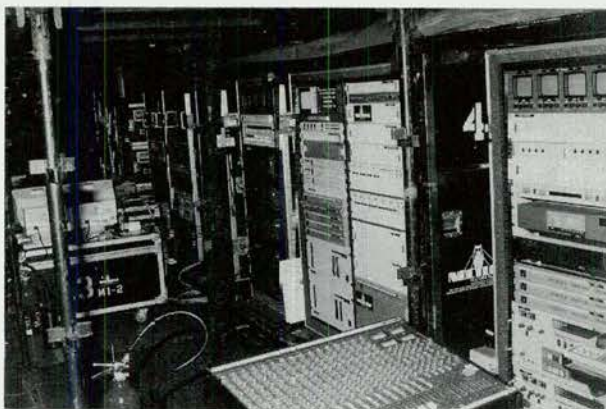
11pm.

"The toughest part is then rounding up the twelve lighting crew to get on the bus to go home!" said Firmin.

Willie and Firmin both agreed that I had picked the worst day of the tour (*Typical Cat Forcer, she always does this! -Ed*) to visit them as backstage was tense with the knowledge that the night's performance had to be spot on for the film crew.

"They're trying to put down what has been achieved with the live show on to film," Firmin told me. "They had a look at it on the Wednesday night and the Thursday night and during last night's show. Tonight is the last time as the continuity won't be there as we'll be in a different venue. I think they've got a lot of cameras so they should get what they need."

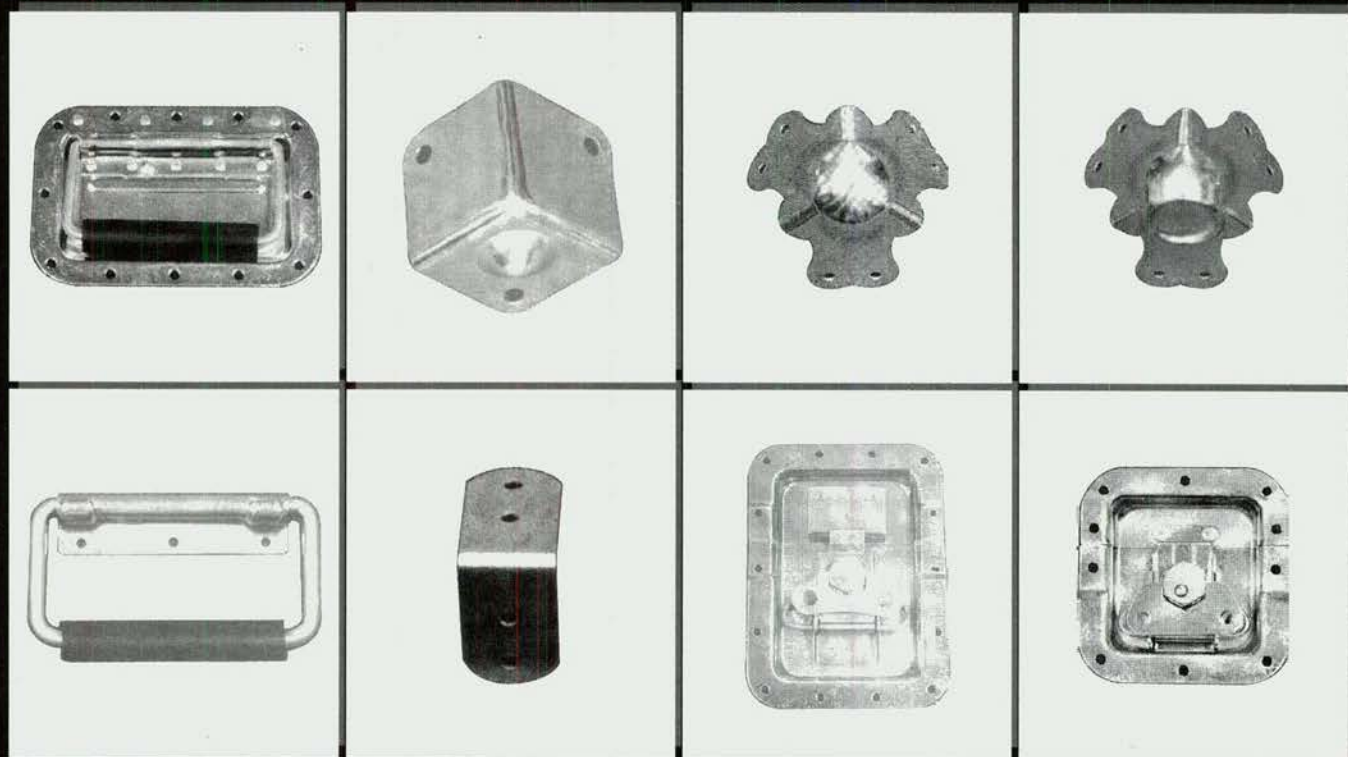
The show was due to finish at 11pm and the load out should be completed by 4am. The crew then had to travel to the airport to load the gear into the plane for New Zealand and a production circular stated that the cross-load into the two 747's could take ten hours. ●



in the 'Underworld' - video control gear. The *Digiwall* and *Vidiwalls* are driven by Philips *Digi!a! Image* Controllers. (See story, next page for details).



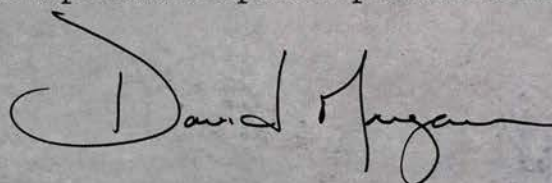
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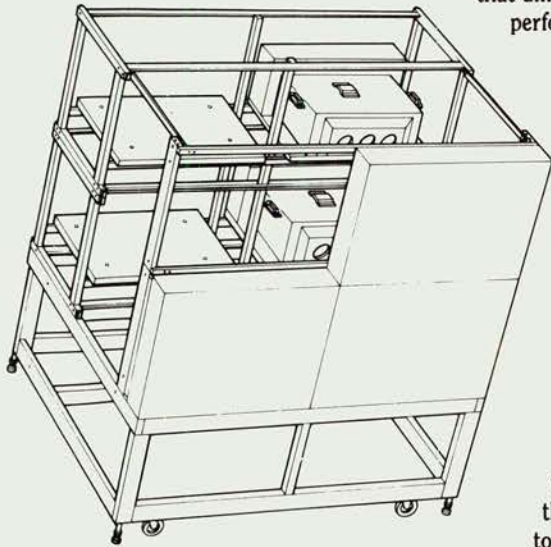
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BETA

Write in Reader Service number: 113

ZOO WAS TV

U2 livened up the AV market with ZOOMERANG, these performances featured Digiwalls (typically 10 x 6 screens and 5 x 6 screens) and Vidiwalls (4 x 3 screens)- which are all essentially rear projection modules (see Vidiwall diagram below). As our main story



reveals, originally video projectors were toured, but the output of these is typically feeble. In addition to the potent imagery shown on the huge video walls, 20 or so 26" Barco monitors were placed around the stage.

You needed to be there to see how creatively these were used, but the technology is not all that difficult to achieve in a stripped down performance environment.

Feeding the video were 14 laser disc players, 4 Beta tape machines, live cameras and a satellite feed that allowed the video crew to snatch 'anything out there'. For this U2 pay cable TV provider rates to the suppliers.

A novel twist was the 'Video Confessional Booth' (see previous pages) which gave the crew recently recorded material of a titillating nature. According to the Jake, the crew tend to enjoy monitoring this one! Then there is a video unit roving about the town before the show, taping topical bits and pieces. This is multi media done to the max!

Video editing, overlay, text and image manipulation is done beneath the stage, and a lot of the technology is from Philips.

WHAT IS A VIDIWALL?

The Philips VidiWall combines a large number of projection monitors to create a large display facility. The projection monitors have internal projection tubes for RGB- red, blue, green, which shoot imagery via a lens onto a front flat screen.

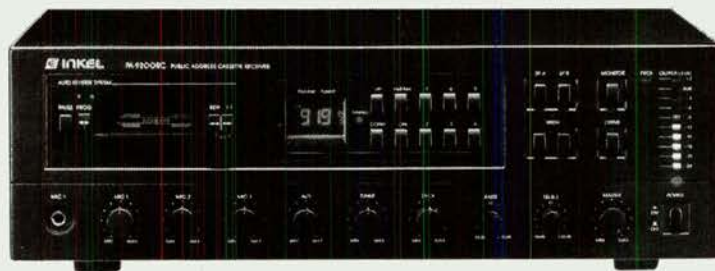
The Vidiwall modules measure 1499mm deep, 864mm wide and 772mm tall. A 4 x 4 configuration suits an ideal 16m viewing distance, while other combinations are easy.

Control of the monitors is by one or more Digital Image Controllers, each of which can support 4, 9, 12 or 16 projection monitors.

Computer controlled switching of several video and audio sources can be achieved from a PC with an IEC 625 card, and text display is made possible by using a Video Overlay card which can be synchronized with a video source, allowing text to be overlaid on a video signal.

Michael Punn at Philips Scientific & industrial is across all the technical details - call him on (02) 888-8222 for details.

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Write in Reader Service number: 143

Well! Another year just about gone and what a year it has been. If you read the newspapers and watch the news on the box, you could be forgiven for thinking that it has been a ghastly year. But all in all, 1993 has really been a great year.

Throughout the past year we have seen some great productions with Phantom of the Opera now relocated in the Theatre Royal in Sydney after a mammoth season at the Princess in Melbourne; L'Oreal mounted one of the largest corporate gala parties ever seen in this country and we have had a feast of visiting extravaganzas including Madonna and U2 (the Melbourne Cricket Ground may never be the same again). Then there's Scrooge, Five Guys Named Mo, Joseph and his Technicolour Dream Coat, 42nd Street, Aspects of Love, etc., etc.

At Bytecraft, we have enjoyed a hectic year which has seen a variety of major projects on both the local and international fronts. State flying control systems at the Cultural Centre in Hong Kong and Opera de Lyon in France, growing dimmer sales into Asia, Europe and the UK, new Hire and Distribution premises in Melbourne, international exhibitions at Siel and Plasa, the list goes on.

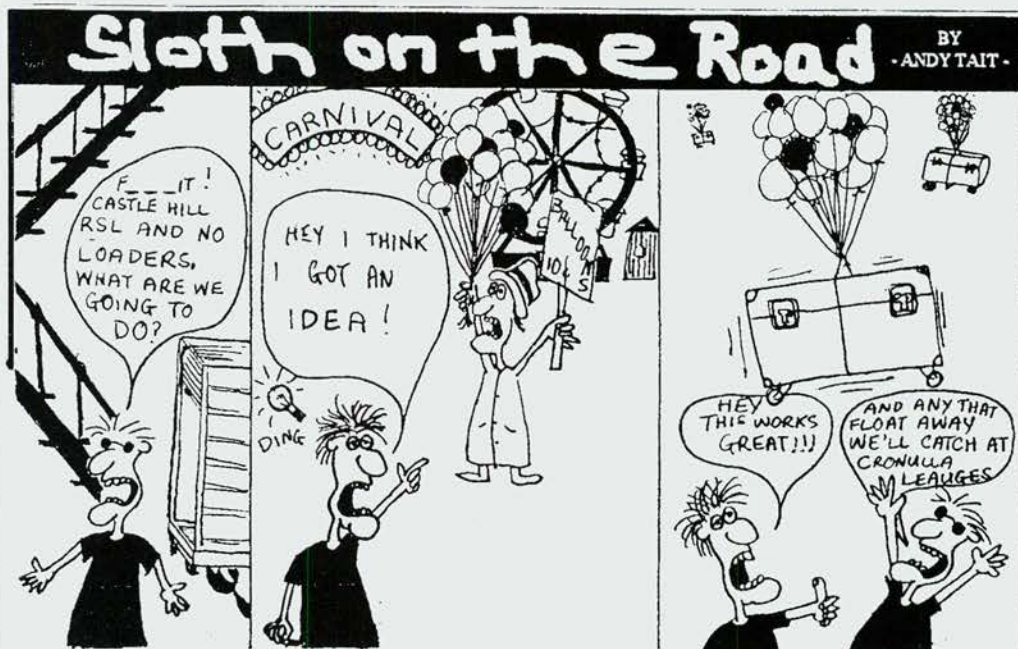
Importantly, it looks like there will be a lot happening in 1994 which is already shaping up as a good year. New shows, new products (watch this space for exciting new products from Bytecraft), new challenges and, of course, ENTECH '94.

David Storey, Bytecraft's Business Development Manager in Sydney has just returned from Hong Kong as Stephen Found heads off to all parts of the globe. We will bring you up to date with news from both these trips in the new year.

Finally, to everyone, we wish you an enjoyable, relaxing and safe Christmas and New Year period and we look forward to returning to an exciting year in 1994.

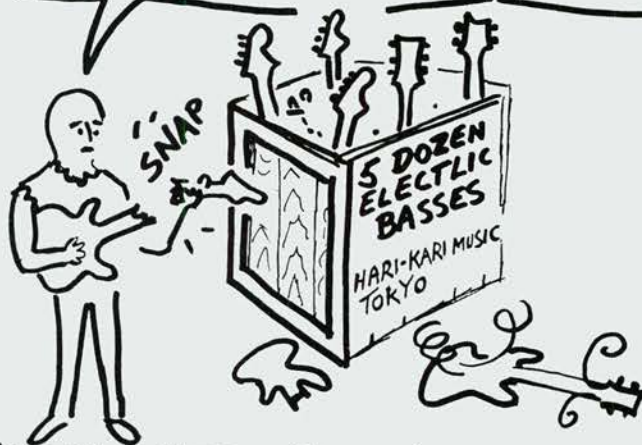
BYTECRAFT are the sole Australasian distributors for Strand Lighting products and also manufacture a wide range of high technology lighting control and stage movement control systems. Call them: (03) 587 2555

For those who choose not to read



LITTLE SHARKY vs the STRAIGHTS from SPACE

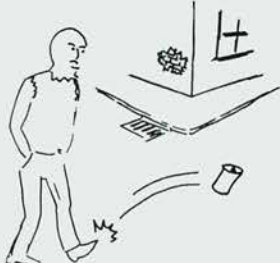
DAMN! ANOTHER ONE OF THESE CHEAP HUNKS OF RUBBISH HAS LET ME DOWN I GOTTA GET LOOSE-WHEEL BACK



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Liggers at CC's new store opening in Melbourne, quaffing and troughing at Roger Clapton's cost!



Bret Steele (ATS) aged at LDI, Orlando. This Southern Gal said: "CM Wangs Oil B Mr Ducks!" What did it mean? Tell us!



Our new Studio Editor, Greg Simmonds, getting the vibe right



Bush muso's Dave & Clarkie drove the tte down for the music show recently.



Jim Mac (CC's), Iain Everington (A.M.), Remy Aromazin (Prod.Hire) & Dino the Drummer



High End Systems Richard Steele is assailed by Connections' Caroline Grafton



At CC's: Premier's Andrew Holmes (left) with Tom Orchard and David Strahan, Zap Lighting



Paul Streetkerk (Phoenix Theatre), Richard Hartley, Sue Clapton & Him Again at CC's



Dave Croxton and Tony Waine from Australian Audio Supplies



Jeff ("Mum" Hammersley, Mike Tanner (Jands) and Cameron Furze (Brighton Theatre Co)



Trevor Lloyd (C.L.S.) with Shane Jacobson and Andrew (too many photo's) Holmes of Premier



Opening party, but Roger (CC's) Clapton is still checking the til ...



Chris Skala (3MU), Shane Jacobson, Mark Moore, Darren Britten (Latrobe Uni) & Andy Skalab at CC's



Craig Hanrahan (Advanced Audio), Ken Mactaggart (Maken Music), Bill Kay (GRS Lighting) and Braham Ciddor Lightmoves



Neil Mace (Entertainment Installations) with Uncle Doug Murray at the Grand Prix

Chapter 4: An Outdoor Sound Reinforcement System (continued)

*How Much Gain is Needed?
(continued)*

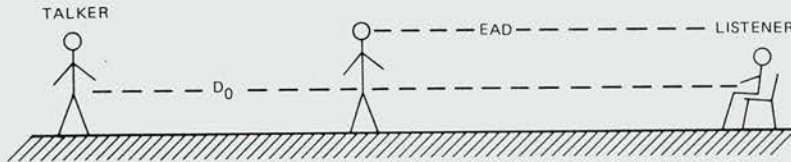


Figure 4-6. Concept of Effective Acoustical Distance (EAD)

$$16 = 20 \log (1/x)$$

$$16/20 = \log (1/x)$$

$$10^{-.8} = 1/x$$

$$x = 1/10^{.8} = 0.16 \text{ meter (6"')}$$

In general, in an outdoor system, satisfactory articulation will result when speech peaks are about 25 dB higher than the A-weighted ambient noise level. Typical conversation takes place at levels of 60 to 65 dB at a distance of one meter. Thus, in an ambient noise field of 50 dB, we would require speech peaks of 75 to 80 dB for comfortable listening, and this would require an EAD as close as 0.25 meter, calculated as follows:

Speech level at 1 meter = 65 dB

Speech level at 0.5 meter = 71 dB

Speech level at 0.25 meter = 77 dB

Let us see what we must do to our outdoor system to make it work under these demanding conditions. First, we calculate the necessary acoustical gain:

$$\text{Necessary gain} = 20 \log D_0 - 20 \log \text{EAD}$$

$$\text{Necessary gain} = 20 \log (7) - 20 \log (.25)$$

$$\text{Necessary gain} = 17 + 12 = \underline{29 \text{ dB}}$$

As we saw in an earlier example, our system only has 7.5 dB of maximum gain with a safety factor. By going to both a directional microphone and a directional loudspeaker, we can increase this by about 6 dB, yielding a maximum gain of 13.5 dB - still some 16 dB shy of what we actually need.

The solution is obvious; a hand-held microphone will be necessary in order to achieve the required gain. For 16dB of added gain, D_s will have to be reduced to the value calculated below:

Of course, the problem with a hand-held microphone is that it is difficult for the user to maintain a fixed distance between the microphone and his mouth. As a result, the gain of the system will vary considerably with only small changes in the operating distance. It is always better to use some kind of personal microphone, one worn by the user. In this case, a swivel type microphone attached to a headpiece, such as worn by telephone operators, would be best.

Conclusion

In this chapter, we have presented the rudiments of gain calculation for sound systems, and the methods of analysis form the basis for the study of indoor systems, to be covered in a later chapter.

Chapter 5: Fundamentals of Room Acoustics

Introduction

Most sound reinforcement systems are located indoors, and the acoustical properties of the enclosed space have a profound effect on the system's requirements and its performance. Our study begins with a discussion of sound absorption and reflection, the growth and decay of sound fields in a room, reverberation, direct and reverberant sound fields, critical distance, and room constant.

If analyzed in detail, any enclosed space is quite complex acoustically. We will make many simplifications as we construct "statistical" models of rooms, our aim being to keep our calculations to a minimum, while

maintaining accuracy on the order of 10%, or ±1dB.

Absorption and Reflection of Sound

Sound tends to "bend around" non-porous, small obstacles. However, large surfaces such as the boundaries of rooms are typically partially flexible and partially porous. As a result, when sound strikes such a surface, some of its energy is reflected, some is absorbed, and some is transmitted through boundary and again propagated as sound waves on the other side. See Figure 5-1. All three effects may vary with frequency and with the angle of incidence. In typical situations, they do not vary with sound intensity. Over the range of sound pressures commonly encountered in audio work, most construction materials have the same characteristics of reflection, absorption and transmission whether struck by very weak or very strong sound waves.

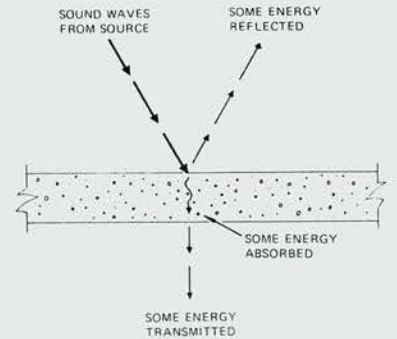


Figure 5-1. Sound Impinging Upon Large Boundary Surface

When dealing with the behaviour of sound in an enclosed space, we must be able to estimate how much sound energy will be lost each time a sound wave strikes one of the boundary surfaces or one of the objects inside the room. Tables of absorption coefficients for common building materials as well as special "acoustical" materials can be found in any architectural acoustics textbook or in data sheets supplied by manufacturers of construction materials.

(Continues)

Peter Kemp

I have recently received a copy of 'The Institution of Electrical Engineers (IEE) Electrical Maintenance, including Portable Appliance Testing handbook from the UK. I am sure that all the rental/hire companies in Australia will be interested in this subject as it is sure to be very dear to their hearts in the future, if not already.

The handbook lays out the theory behind the testing together with the suggested procedure for this. The table indicating frequency of inspection and testing of equipment clearly shows "Equipment Hire" to be tested always before use. The most important check that can be carried out on any piece of equipment, particularly portable appliances, is the visual inspection.

Inspection - the following require inspection:
* Flex - is it in good condition? Is it free from cuts, fraying or damage?
* Plug - is the flexible cable secure in its anchorage? Is it free from any sign of overheating? Is it free from cracks or damage?
* Socket outlet - is there any sign of overheating? Is it free from cracks or damage.
* The Appliance - does it work? Does it switch on and off properly? Is it free from cracks or

damage to the case, or damage that could result in access to live parts? Can it be used safely?

If the answer to any of these questions is no, the appliance must not be used and this must be reported to a responsible person.

Testing : This needs to be carried out by a person competent to use the test equipment, to understand the results and to inspect the equipment, including disassembling to check the cable connections if practicable.

- * Thoroughly inspect the appliance for signs of damage.
- * Inspect the flexible cable for damage.
- * Inspect the plug

1) Look for signs of overheating - this may be caused by a fault on the plug (eg: a loose connection) or by a faulty socket-outlet (or connection).

2) Remove the cover of the plug. Check the flexible cable is properly secured in the cord anchorage - gripping the sheath so that there is no strain on the cable cores.

3) Check that the cable core terminations are tight, and that the plug is correctly wired.

Only if the appliance proves satisfactory on inspection, should the testing proceed.

Testing with instruments

Earth Continuity Testing : It is necessary to check that there is earth continuity from the earth pin of the plug to the appliance. The impedance between the pin and the metal

case of the appliance should not exceed 0.1ohm.

A test current of 1.5 times the normal rating of the appliance or 25A, whichever is the greater is a typical requirement of appliance standards.

Insulation Testing : The test is carried out between the live conductors and earth. Resistance between live parts and the body 2 M ohm (when tested at 500V d.c).

Operational Tests : If test instruments are not available, this test can simply be to switch on the appliance to see if it works. If current measuring equipment is available, the load current or power consumed can be measured and checked against the rating.

Records

The results of inspections and tests should be recorded, not only as a defensive record, but also to allow comparison with later results. This will assist in identifying faulty equipment and assist in determining inspections and test frequencies.

All appliances should be labelled, so they can be identified on the record, this label may also indicate the date of the last test.

This may give you some insight into the testing procedure for equipment and may assist you with your equipment.

Peter is head of Coemar DeSisti Australia, call (03) 467-8666.

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Australian DJ Supply Co. NEW...

Orion Promix 2

The new Orion Promix 2 stereo mixer is ideal for small installations, bedroom DJ's, or small P.A.'s, say A.D.J. Co. This tiny unit features 2 phono inputs, 2 line inputs, mic input, full cueing facilities and a replaceable cross fader. The RRP is only \$199.00.

Revolver

The Revolver is a powerful effect utilising an ELC lamp for extra punch. Featuring a rotating gobo, beams are channelled through a dichroic prism and a spectrum of richly coloured images are projected through 180 degrees via an accurate music activation circuit. \$1250.00RRP.

Mini Petal

Ideal for the small club or mobile DJ's. The Mini Petal offers features found in units three times the price. No less than seven gobos rotate slowly while being projected onto a dichroic dish of amazing colours. This unit is entirely audio activated at \$749.00 RRP.

Littlelites

An absolute must for every nightclub, performance venue, mobile DJ and tour operator. A black flexible gooseneck that has a tiny yet bright 5W of light output at the end. Available in both XLR and BNC format. Only \$49.00.

AE AUSTRALIA: New D Series SPEAKER SYSTEMS

These Australian made loud speakers have Lorantz Bass-Midrange drivers and Motorola high frequency units in computer designed tuned enclosures for high performance.

The cabinets feature steel grilles and corners, XLR inputs, removable black panels and heavy duty handles. The boxes are lightweight, compact and can include a top hat suited for most speaker stands & are covered in grey carpet. The first models available are all full range speakers which can be supplied complete with OMP amplifier modules installed in them, ready to accept an attenuated line input. Priced from \$485 each. Also available: low profile monitor wedges from \$580 each.

Sound Unlimited Productions take on Megatone.

Megatone Hire in Sydney's inner western Leichhardt was recently taken over by Sound Unlimited Productions. S.U.P.'s manager Tony Romeo said the move, which took place at the beginning of November, will be a change for the better.

The existing hire department, which already houses an extensive range of equipment, will be updated or sold to make way for all new products. They have already added new JBL System 1400's and Jands SR 3000 amplifiers.

Call Tony or Dave on 564-2277, and note the new fax number: (02) 564-5233, or go call at 566 Parramatta Rd, Leichhardt.

dmc Sydney plan big N.Y.E.

...which means that the Drew Muirhead Corporation, better known as lower case d.m.c., will be busy like the rest of you on New Years Eve. This new-ish Sydney outfit has a LOT of Moving Light Products amongst other hire type items, and have already got seven productions on the books for the big night.

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NIGHT CLUBS

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BY TONY CURINI*

Many DJ's are great at what they do, but some know more than others. Ask any DJ what does PAR mean and they'll give you a glazed look in their eyes, say what!! (*Tee hee. I know. -Ed*)

WHAT DOES PAR MEAN?

PAR stands for Parabolic Aluminised Reflector. The number after (eg. PAR 64) determines the diameter of the reflector opening, expressed as a total number of one-eighths of an inch. Therefore, in the example, 64 one-eighths = 8 inches.

THE DIFFERENCE BETWEEN A PINSPOOT AND A FLOOD LIGHT

Pinspots are quite popular in nightclubs. They are also called sealed beams. The name refers to its construction, as the light source reflects back into its reflector and out through the lens-shaped glass. The beam becomes a tight parallel light source with a narrow beam of light with only 4 degrees of spread. On the other hand, a Flood, (abbreviation for FLOOD-LIGHT) is a broad beamed light source used to flood an area with lighting.

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THE FORMULA FOR CALCULATING WATTS FROM AMPS

$$1 \text{ X V} = \text{P}$$

The (1) stands for Amps or current. The (V) is Volts and the (P) is Power or Watts. If you

(continued over)

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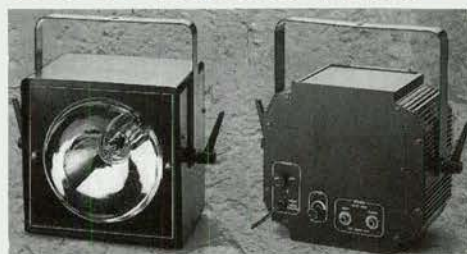


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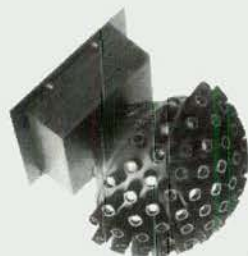
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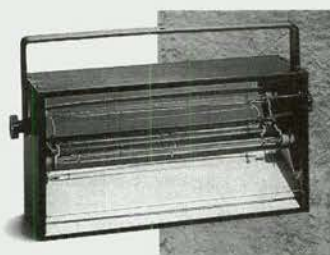
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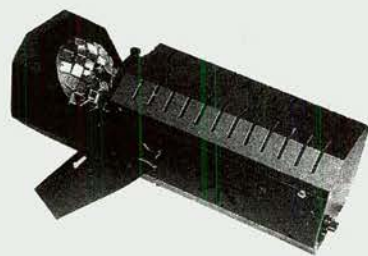
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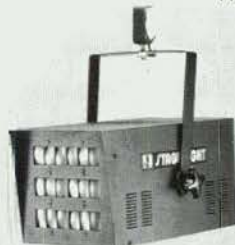
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DJ's Lighting guide

have a 10 amp load and the voltage is 240 volts, then the power is 2400 watts or 2.4kw. You can use this formula to calculate amps and volts by inverting the formula.

WHAT DO INCANDESCENT, HALOGEN AND QUARTZ LAMPS HAVE IN COMMON? They are all used in night clubs. An incandescent lamp consists of tungsten filament wires within a vacuum, inside a glass envelope containing gases.

A halogen is an incandescent lamp filled with a halogen gas mixture, usually bromine or iodine.

The quartz lamp has a quartz envelope instead of glass, due to the high heat involved. Be careful when installing this type of lamp. Always use cotton gloves or wipe the lamp with alcohol before turning on. The oil from your finger tips will shorten the life of the lamp. Also, never move or shake the light whilst it is on.

WHY DO MY PINSPOTS KEEP BLOWING MY CHASER?

A pinspot utilises a low voltage lamp that requires a transformer. It is when the transformer is turning the lamp on and off that problems occur. The back (EMF), which is Electro Motive Force, can be controlled by

snubber networks which basically absorb back (EMF). When choosing a chaser to run pinspots, always over-rate the unit by 30% or higher. This will ensure the unit won't let you down. *(I didn't understand the reference to Back EMF above, and it's deadline so I'll let it go... I always plugged in a resistive load like a small light bulb with each set of Pinspots. The resistive load settled things down. -Ed)*

HOW DOES A SMOKE MACHINE WORK?

It's quite simple! The fluid is a mixture of distilled water and food grade poly-glycols that enter a heat exchanger which is heated by an element. As the fluid passes through the chamber, the liquid expands and vaporises, then exits the unit as fog or white smoke. Be careful, as, depending on the thickness or density of the fog, it can set off smoke detectors. Check the sensitivity and pre-arrange a test before the fire brigade think it could be a fire.

WHAT'S A GOBO, IRIS, GEL AND BARN DOOR?

A Gobo is a flat piece of patterned material. The pattern usually takes the form of shapes, thereby forming a screen or stencil type effect. They are most commonly seen in moving projectors or theatrical lanterns.

An Iris is a mechanical device that adjusts a beam of light to become a larger or smaller circle.

A gel is a light filter. The name gel came from the original material as it was made from gelatine.

Barndoors are normally 2 or 4 hinged flaps that are designed to block off light from the front of a theatrical lantern or follow spot.

**Tony is from Sunset Mobile Entertainment, call (03) 625-4545.*

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Nervous clients are always great to have a bit of fun with or as some might say "Take the piss out of".

The client had booked a reasonably large lighting and sound show for his important under 18's dance party. Well, on arrival to deliver and set up this monster, of course you feel confident, after all you've done this a hundred times before. The nervous client approaches you on arrival and inquires "is everything okay?". Your reply is confident and direct, "Absolutely not a problem, as long as the amp doesn't blow up and the lights work, Ha Ha!".

The client on hearing this begins to shake and sweat. It's cruel, I know, but fun just the same. Well everything is loaded and plugged as per usual. Time to fire the show up.

On goes the amp and after three seconds

(continued)



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GEAR

the yellow 'short' light is displayed both sides. Great, the amp has blown up. After dispatching the road crew back to the office to get another amp, it's disco light time.

The three phase power is turned on and a click is heard; the earth leakage system has tripped. Terrific, the lights don't work either. After 15 minutes of searching, a call goes through for the road crew to bring a six way scanner bar with the replacement amp.

The show goes on, on time, with a shaken and sweating show manager stage left who I think to this day has never said "Absolutely not a problem, as long as the amp doesn't blow up and the lights work"!

-Admission from Mike Jordan, *Night Sounds Entertainment* (02) 570-4155.

The Full Moon II

One outer ring of white beams and another inner ring of dichroic coloured beams rotate in opposite directions spinning in sync to the music; very bright, 10 kg. Lamp 24V, 250 watt EHJ. Price \$990 RRP. Call AE Australia (02) 896 4033 to locate your nearest dealer.

MoonScan 250/300

Scanning projector with extremely bright rotating Moonflower effect scanning left to right; two models available, one that utilises a 24volt 250 watt lamp and the MoonScan 300 utilises a 65416 300 watt 240 volt lamp Price \$470 RRP; the MoonScan 250 comes with external 24v power supply; both Moonflower and scanning movements are sound activated; 55 x 15 x 15cm 4kg Price \$520 RRP. Call AE Australia (02) 896 4033 to locate your nearest dealer.

CLUB & DJ Profiles:
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PO Box 439, Epping NSW 2121.

Phasor 250/300

Two semi circle rings of dichroic colours project two half circle coloured cones of light which rotate in opposite directions both spinning in sync to the music and create a tubular tunnel that opens and closes; two models available, one that utilises a two 24 volt 250 watt lamps and the Phasor 300 utilises a two 65416 300 watt 240 volt lamps Price \$895 RRP; the Phasor 250 comes with an external 48v power supply; 26 x 28 x 14cm 5kg Price \$995 RRP.

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AE Australia have released their M-Series Professional Power Amplifiers. Designed and built in Australia, these amplifiers utilise Mosfet technology.

The M-Series amplifiers are of a solid construction featuring a folded steel chasis, 6mm aluminium front panel and extruded heat sinks provide additional structural strength. Front and rear carry handles provide extra protection for external hardware.

All models have a single clip LED per channel and an illuminated power switch. The clip lights indicates the actual point that the amplifier goes into clipping with a visual indication, a guide to prevent harmful distortion and potential speaker damage.

The M-Series all feature Bridging Capabilities allowing the amplifiers to deliver all of their available output into a single 8 ohm speaker.

The 800M & 1600M incorporate rotary cooling fans. Back panels features include: Female XLR inputs; Male XLR inputs- patching to an-

other amp or to the other channel of the same amp; 2 x Male XLR outputs per channel on the 800M and 1600M; 1 x Male XLR output per channel on the 400M; Fused IEC Male 240 volt AC socket; Rail fuses; Rear carry handles; Bridging switch; XLR male Bridge output.

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For the '94 show, over 60% of the available stand space has already been allocated to renowned manufacturers throughout the world. The Italian Group organised by the Italian Institute for Foreign Trade (ICE) in cooperation with the Association of Italian Discotheque and Theatre Equipment Manufacturers (APIAD); and the UK delegation organised by Professional Lighting and Sound Association (PLASA) along with the British government will again support the '94 event.

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A
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EXHIBITION

The Asylum & Classics

Nestled in Woy Woy Leagues Club approximately one hour north of Sydney is a venue with a split personality. Justifiably named **The Asylum** and **Classics Nightclub**, this venue alternates personalities on Friday and Saturday nights.

The Asylum has been in operation for over ten years and operates on Friday nights from 9.00pm to 3.00am. The music style is Top 40, obviously with an emphasis on dance and typically attracts audiences from 500-600 people. Regular promotions include give-aways from Concert Tickets to Holidays.

On Saturday nights the venue transforms into Classics Nightclub and is aimed at a older age bracket (although the younger generation still seem to enjoy the show). A live 60's cover band alternates with the theme disco, playing music from the 50's, 60's and 70's and operates from 8.00pm till 1.00am. Whilst on stage the band appears on every video screen in the venue and foyer with additional stage lighting from the Trackspots in the dance floor rig. Classics has enjoyed success for the last five years.

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Da DJ

Profile

TIM IRELAND : SYDNEY

Tim Ireland (DJ Tim)
Resident DJ/VJ
Roundabout Hotel Hurstville
Tues, Fri, Sat Nights

Tim began his DJ career back in 1989 (commonly referred to as his Pre-Pony Tail days) with a major mobile disco company in Sydney. His talent soon became obvious and was suddenly being booked 4 nights a week (regularly) by impressed clients.

Tims Resident DJ success story began with a booking at Danielle's in Bankstown on the dusk to dawn shift. It was there he honed his skill and creative talent as a Video Jock. Whilst at Danielle's a remake of Jabana and "Tim's World" first went to air, much to the surprise and amusement of his audience. Later to come was his live rap version of Tequila.

When asked for any tips, Tim says "Video Video Video!. Nothing beats a good video. If you haven't got one, make one. If you have a bad one, fix it. Music video when done properly changes and creates atmosphere". Another important tip Tim had was, "get an agent to handle negotiations for you and stay loyal to your agent. Agents are great. If you have a deal going you aren't happy with, the agent can relieve you of any agro by renegotiating on your behalf. Also, they are a great back stop if you're short of work; they can always find something for you to do, so you can eat. That's exactly what they are for".

Tims mic technique could be best described as a combination of professional approach with an irreverent content. Favourite tracks are from Prodigy, The Movement, 2 Unlimited, Prince, Madonna, Wham, Culture Club. But the most important factor is, play what the majority of punters want to dance to. Tims ambition is to seriously release his own dance music video clip, become famous, wealthy and buy a Nightclub where patrons are not allowed in.

DJ Tim can be contacted through his agent on (02) 570 4155 and YES there is a demo video on his work.



 Contact Caroline Grafton (02) 876-3530 or Fax (02) 876-5715 re. contributions &/or advertising in these NIGHTCLUB pages.



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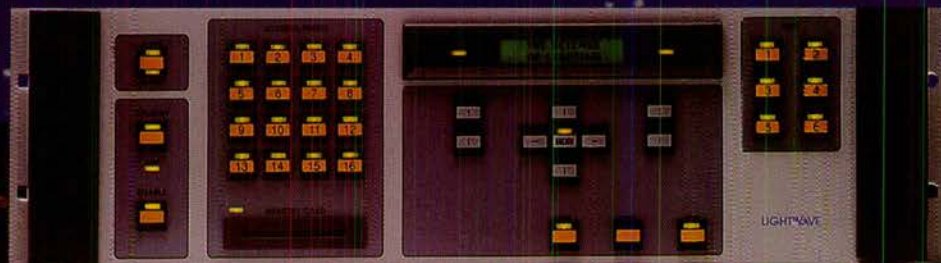
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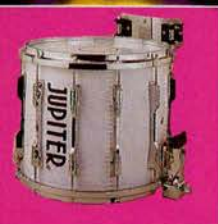
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Since the announcement of the show, very positive response has been received from many individual international manufacturers throughout the world and two gigantic national pavilions from Europe are anticipated.

For further information,
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G R E A T M I S T A K E S

A great holiday double!

It's about 4a.m. in the morning, both me and the lighting guy have just finished loading out of a forgetful gig, (you know the ones where no crowd turns up and the support band supplies no loaders, so you're faced with 4 tonne of gear, 20 stairs and just the two of us!) It's been raining torrenially all night and we're faced with a 2 1/2 hour drive back home. Halfway home, after just having filled up with diesel fuel, we get only about a km down the road when the truck suddenly comes to a halt and my many attempts to start it again are to no avail.

Being cold, hungry and tired, and not forgetting it's still raining cats and dogs, we decide to leave the truck parked by the side of the road, get a cab back to my place for a couple of hours sleep and come back in about 4 to 5 hours.

Morning comes around, the N.R.M.A. man gets here and diagnoses the problem - we have water in the diesel tank - what!

My amazement at this was nothing compared to the P.A. owner's when I rang to tell him this. Within 1/2 an hour he meets us at the truck, takes me to the nearest El Cheapo truck rentals and after some fairly fast cross packing between 4 tonne trucks, (easy you say!) we're finally on the road again, bound for Canberra, yeh.

Just about this time, you guessed it, it starts raining heavily again and so it's not long before we get caught in a traffic jam about 5 miles long. (Whilst all this is going on, we managed to phone the venue twice to let them know we're just running late, hah!)

1 1/2 hours later and with my left leg about to drop off because stop start traffic and a

noisy old rust bucket truck with a hand brake not working just don't mix, we finally get through only to be told by the coppers that up ahead is flooded, so in finding another way to get out of Sydney, I choose the wrong way and end up down some back roads, including 3 or 4 partially flooded ones.

We get through all of these only to come to another halt - this time the battery's well and truly dead - OD'd on water we think.

By now it's dark and cold and it's about 7p.m. and quite frankly I've had enough.

We find a farm house of friendly people close by and they let us use their phone: so I call the venue first to let them know the production won't be coming tonight and then I ring the P.A. owner. (Both were about as happy as a St. George supporter after the grand final.)

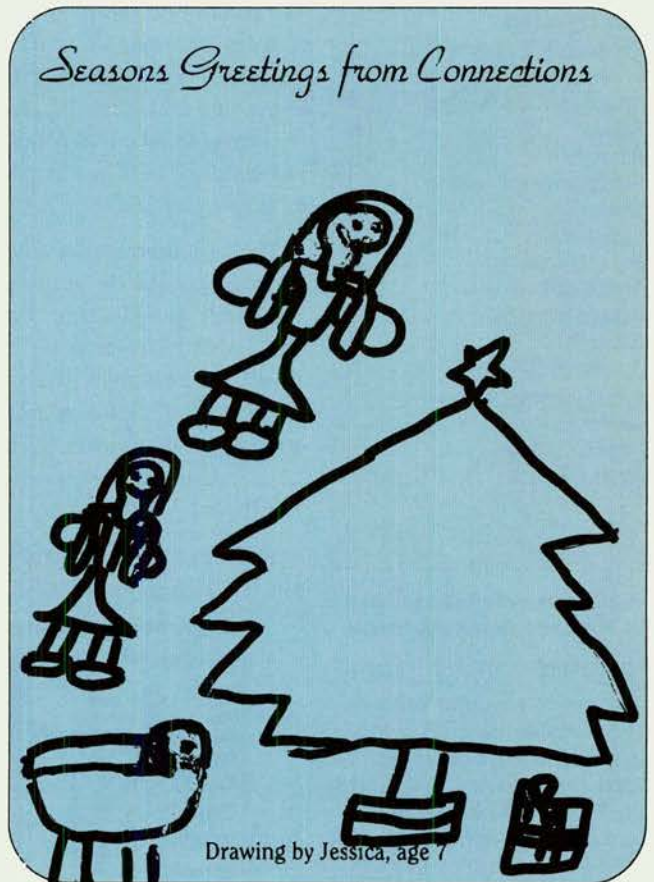
Stop, gasp, we finally get a bit of luck, the lighting guy remembers he has relatives out here somewhere; so we start hitching and walking and walking andhoping. Well, you wouldn't believe it, we get picked up and taken a couple of miles to a pub. We call his relations, they pick us up and we get

looked after with some food (yummy) and a bed to sleep in.

The next day all I can remember is getting up, having a real breakfast, going back to the truck, fitting a new battery, driving back to my boss's house and with a blunt fact just handing him the keys.

We haven't seen each other since but I feel neither of us totally blames the other for what happened.

Name withheld to protect the innocent!



Drawing by Jessica, age 7

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Publisher thanks all above, without whom Connections would cease!

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GREAT! mistakes

This is actually, three Great Mistakes, from crew members who work for us, a small PA co. in Wollongong.

In the old days of the Queensland touring circuit a band from here hired our PA to go to Cairns on permanent hire for 3 months. (They didn't come back for 12 months). Anyway once they got to the gig they had to play for 6 nights, half hour on, half hour off, 6 hours a night. (*Sounds like the old War & Peace at Parramatta. - Ed*)

They were set up on a revolving stage, and on the other side was the DJ. This DJ (who apparently was very good) had a lot of props that he used to use, and most of these were hats. Police hats, firemen's hats, that sort of thing.

Well, the first couple of nights went alright, but things went downhill from there. Each night the guitarist in the band would give the DJ a song list of all the songs they were going to play that night. Of course the DJ played every song on their list. (*This begs the question, WHY give the DJ a song list at all? -Ed*)

The band eventually got very fed up with this and the sound guy (we'll call him Graham, 'cause that's what his name is) decided to rectify the situation. While the DJ wasn't looking, Graham pinched his policeman's hat anddefecated (did a pooh) inside the hat.

Well, the DJ was firing along, put on "Message in a bottle" by

the Police, quickly changed from his sailor's hat to his copper's hat - and wore it all over himself. (*Sure, sure. -Ed*)

The band loved it and so legend goes, never had a problem with him again.

Anyway, about one year later, they are playing in Wollongong and they encounter another problematic DJ except this one doesn't wear hats, so Graham goes out into the foyer and rings the club.

The guy on the door answers the 'phone (3 feet away from Graham) and Graham pages the DJ. The doorman says that the DJ is working; Graham says it's very important, he is from the local newspaper and wants to do a story on the DJ.

Anyway, the DJ comes to the 'phone, Graham tells him the "sting" and the DJ falls for it. Graham has told the DJ to come down to the newspaper's office (it's 1 a.m. in the morning) and the DJ does.

3 a.m. in the morning the crew drive past the newspaper's office and there is the DJ peering into an obviously dark empty office. Sound guy 2, DJ 0. (*Sure, Sure. - Ed*)

The last story has a moral to it. The boys are doing an out-of-town casual hire and pull on a loader who has had "plenty" of experience. The lighting guy makes a fatal mistake and tells the loader to check the lights that are standing on the floor. Well you can

imagine he forgot to tell the "loader" about the power input required for 64's and blew up 12 of them.

When asked to explain, the loader said "they worked for a second, really bright, and then went out." Very expensive gig.

Moral of that story is, get references from all loaders, especially if you want them near your 64's. Oh well!

Editor comments: Sure, sure. Look, these are wives tales, urban myths, call them what you will. Fact is, they all lack credibility and the first two are a mighty slight on the high intellect and moral probity of D.J.'s, short for Disk Jockies.

The last one could go back to the days of Black Feather, when a real simian roadie came to me at Barratt Lighting and rented 16 Par 64's. They WERE new then, and this goose spent time reefing the round earth pins off the plugs, then of course blew them all up.

He then figured out how to use the phone and abused me!

WE NEED YOUR GREAT MISTAKES!

Please Fax or Mail your tale to:

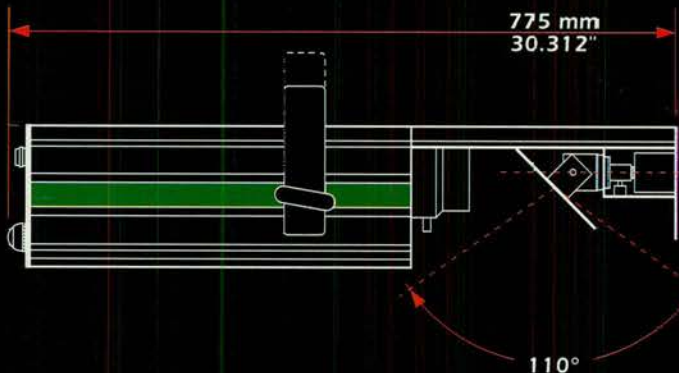
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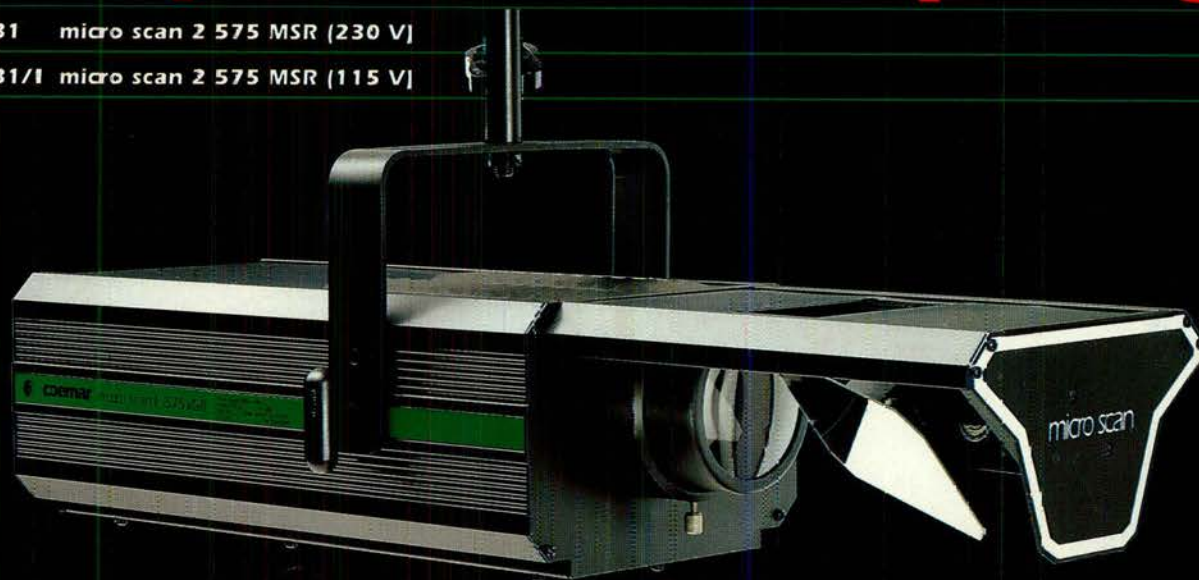


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