LIGHTS!

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CLIFF RICHARD - LOOKING AT LIGHTS

SPECIAL PRODUCTS PREVIEW ISSUE
NEW FORUM FOR LIGHTING DESIGN

LIGHTS!

IN THIS ISSUE

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SPOTLIGHT ON US

Issue 3 of *Lights!* unashamedly puts the spotlight on new products introduced this Autumn and reviews the progress and application of many others introduced since the 'Strand Spectacular' event of three years ago. Once again there are several milestone products.

Whereas Cantata with its new 1.2kW lamp and unique rotating gate set new standards for professional luminaires, today the new Quartet stands set to follow its illustrious Patt 23 and Pattern 123 predecessors as a distinctive design for the more compact venues.

Strand's new MX control desk packages surface mount electronics within a sleek injection moulded casing, creating a quality bench mark for memory desks that are well within the budget of most stage or studio venues. A MIDI interface enables musicians to call up their own lighting cues.

Strand's Premiere control system now gives the architectural designer a sophisticated programmable solution to dynamic lighting within the built environment. And we chart the progress of EC90, a true digital dimmer, as it begins to enter service with the major television companies and theatres.

Our technical feature looks at SMX — a new digital communications protocol, which will be the essential link between the control desk, dimmers and luminaires with the increasing deployment of distributed intelligence. Also, we have not forgotten the importance of student drama with productions and installations at schools and news from dance and theatre to round off this issue.

Finally, *Lights!*, once again is able to bring special offers to its readers in the form of stencils for lighting designers and a repeat of our popular sweatshirt offer. See page 15 for details.

NEWS IN BRIEF

FROM RUSSIA WITH LUFF

When the English National Opera set off from its London base for a tour of Russia, the company did so in the knowledge that Strand technology was travelling there and back with them — courtesy of Strand dealer Luff Light and Sound.

Luff supplied two Galaxy 2 systems, in specially-constructed rugged flight cases. The Galaxys themselves were adapted to ensure they could withstand heavy-duty use on the tour.

The ENO divided its technical group into two teams. Playing venues at Moscow, Leningrad and Kiev, one team remained with the Company, while the other went on to set up the next show.

GEMINI 2+

Since its introduction at PLASA last September, Gemini 2+ with its new *Plus* features has gone from strength to strength. More Gemini consoles have been installed this year than in any other in its history, including such prestigious venues as the Royal Academy of Dramatic Arts, London, four systems into Canel Plus, Paris, Ballet Opera De Lyon and BBC Studios in Manchester and Birmingham.

Key to this recent success are Gemini 2+'s new features: 340 control channels, dual colour video displays, increased system memory, non-dim assignment in patch and others. A full colour brochure and specifications are available from your local Strand agent.

● See *Dancing The Light Away* p.10.

CLIFF SAYS: LOOK AT THE LIGHTS

Who better to open this year's PLASA exhibition in London than that ageless performer Cliff Richard? During his time as a singer, film, stage and TV star he must have seen more light changes than most.

Cliff will open the exhibition at Olympia at noon on Monday, September 10, followed by a 'walkabout'. The exhibition actually opens on Sunday the 9th, and runs until Wednesday 12th. (Photo by Sue Andrews)

Editorial adviser: *David Brooks, BSc., CEng, MIEE, DMS.*
Edited, designed and produced by: *Ledger Bennett Communications Group, Haywood House, Lake Street, Leighton Buzzard, Beds., LU7 8RS, England.*
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HERE IS THE NEWS ...ITN HAS INSTALLED AN EC90

Strand's revolutionary EC90 dimming system, reported extensively in the last issue of *Lights!* has taken off in a big way, with the first major order going to Independent Television News for its new studios in central London.

The studio, on the site of the former *Times* building in Grays Inn Road, is due to open on Christmas Eve. The move from ITN's existing four sites around Wells Street marks the dawn of a new era for the company, which is now committed to becoming 'much more commercial' in its business approach. This means that the company's studios have to be of a sufficiently high standard to allow them to be hired out for independent productions.

Within the new complex, ITN will have four studios, two of them both 260m^2 in area. ITN already uses a Galaxy 3 system and an M24 and is committed to a policy of continuing upgrading of facilities.

Given that the basic business of ITN is gathering and presenting news, heavy investment in a system such as EC90 may, on the face of it, seem excessive. Yet when you consider the scope of problems the production team is likely to face, it quickly slips into perspective.

"WE ARE IN THE BUSINESS OF LIVE TELEVISION AND ALL THE ATTENDANT PROBLEMS THAT BRINGS"

ITN employs about 1000 people and in addition to its central London headquarters, has bureaux in the United States and Moscow.

Project engineer Phil Holland explained, 'The very nature of news means that you never know in advance who is coming in for an interview. This presents a host of technical problems which have to be dealt with.

'For example, we do not know until the last minute if the people coming in are black, white, bald or what colour clothes they are wearing. We are in the business of live television and all the attendant problems that brings. During the course of a day, across the network, we are presenting a total of eight hours of live television.'

The point was expanded by Building Services Manager Jim Mitchell. He said,

Julia Somerville — as seen on screen.

'Very often when they start running the news they do not know how it is going to finish, if a late news item comes in. This presents problems which need a rapid response, since it is live television.'

There are enormous changes ahead in the broadcasting environment with the passing of the Broadcasting Bill. ITN will be a profit centre and is confident that it will continue to be the main supplier of the news for ITV.

Jim Mitchell, who is overseeing the new technical installation, said, 'We have just got to run as a commercial enterprise. The philosophy is that if we have a studio, then we will use it.'

In ITN's case it was a question of perfect timing that presented the opportunity for EC90. The company was in the process of concluding a new contract for PIP dimmers but because EC90 was at that time in an advanced stage of development by Strand R+D engineers, Strand's Alan Luxford suggested that it might be more suitable.

"THERE IS NO DOUBT THAT EC90 IS REVOLUTIONARY. WE WERE STAGGERED BY IT"

Working at such a frantic pace, ITN's most urgent problem is the lack of time for experimenting with lighting levels. Any alterations to the lighting often need to be immediate and exact, which is where EC90 comes into its own.

Phil Holland explained, 'The beauty of the EC90 system is that, for example, if there was a news flash, then someone could walk into the studio without knowing anything about the Galaxy and just push a button in the back-up control station and there would be a pre-set fade for them.'

But the Strand involvement did not stop at merely providing and installing the necessary hardware. For with Strand's in-house expertise, the company was able to assist ITN's own engineers in designing the new studios, and worked closely to devise the layout and technical configuration.

The changeover from the present studios at Wells Street to Grays Inn Road will be a masterpiece of organisation. Throughout the move, the ITN bulletins will keep on the air at regular intervals.

ITN's existing Galaxy 2 system is being up-graded to a Galaxy 3, with a fault reporting facility. This allows the Galaxy to receive a constant up-date from EC90 about faults, should they occur anywhere in the lighting system. The existing PTM dimmers, installed by Strand in 1968, have been up-graded.

Jim Mitchell explained, 'The whole approach to lighting has changed in recent years. The younger ones who are far more adventurous are coming to the fore now. The change has come about in the last 18 months and it is mainly due to the fact that new technology gives lighting designers new ideas.

'As far as EC90 is concerned, there is no doubt that it is revolutionary. We were absolutely staggered by it.'

The first programme to go on air using the EC90 system will be Channel 4 news at 7p.m. on December 24th.

New orders for EC90 systems have now been received from London Weekend Television and from BBC South West.

SET UP WITH THE INTENTION OF BECOMING THE PROFESSIONAL BODY AND VOICE FOR THE LIGHTING INDUSTRY, THE LIGHTING FORUM IS GAINING GROUND RAPIDLY, PARTICULARLY IN THE ARCHITECTURAL FIELD. HERE WE FIND OUT WHAT IT IS AND WHAT IT DOES.

Peter Hucks and Diane Goslar, of Lighting Forum

THE QUEST FOR LIGHTING EXCELLENCE

Any profession worthy of the title needs an official governing body to act as both its mouthpiece and its watchdog.

Although there are separate associations for lighting designers and lighting manufacturers, there has not, until recently, been an association that encompasses the lighting industry as a whole. But when you consider that lighting is one of the younger professions, having made the quantum leap from the almost-dark ages to the age of light in little more than a hundred years, this is not so surprising.

The Lighting Forum was established four years ago by lighting designers and consultants as a totally independent association in Britain. Its principal aim is 'to advance and stimulate lighting excellence'.

Current president of the Lighting Forum is Peter Hucks, senior lighting designer at Lighting Design Limited, based in Hammersmith, West London.

He explained, 'What we wanted to do was to bring lighting design specialists into closer contact with the lighting industry and to provide clients with a body to advise them on such matters as terms of engagement, ethics and professional practice. Prior to the Forum we operated without any general set of standards to work to.

Munamar Hotel, Turkey: *Miniature halogen starlights and downlights.*

'An important benefit of the Forum has been the opportunity it has given lighting designers to meet with lighting manufacturers and other design disciplines to swap ideas and to discuss future trends and needs.'

So far the emphasis has been unashamedly on architectural lighting.

He went on, 'Lighting designers often have to go through the whole design process with architects to get them to appreciate what we are trying to achieve. We provide expert support to help architects become more efficient with their designs and more effective with their lighting solutions.

'Our intention is to broaden the scope to include all aspects of lighting design, including theatrical, film and television.'

Further credence is given to the work of the Forum by the fact that it is affiliated to the Chartered Society of Designers, who indeed nominally 'house' the Forum and provide it with a headquarters in Bedford Square, London.

'Links with the Chartered Society of Designers are proving invaluable,' said Peter. 'Its Colour Group — which meets to forecast trends in colours for product, industrial and commercial design — is, for instance, in discussion with us to establish joint seminars and projects on the effects of lighting on colour.'

In line with the professional status sought by the Forum, the long-term aim is to establish it on a par with the RIBA.

Plans are in hand to devise a practice board, bearing the Lighting Forum logo. This would be displayed on construction site hoardings, alongside the boards of architects, engineers and surveyors.

On the educational side, plans are also being finalised for a BTEC course in lighting, leading to a nationally recognised qualification within Britain with the Wimbledon School of Art being the first venue. The curriculum for the course is currently being formulated.

"AS PROFESSIONALS WE ARE THERE TO BE AS HELPFUL AS POSSIBLE TO OUR CLIENTS"

For the time being, the Forum sees its principal role in the promotion of project excellence, and on a more mundane level, as a clearing house for enquiries. Architectural practices, for example, can contact the Forum's information officer, Diane Goslar, or the Chartered Society of Designers, for advice on lighting designers who are members of the Forum. Architects and designers can then select the most appropriate member from lists giving profiles of the individuals and practices.

'As professionals we are there to be as helpful as possible to our clients to ensure their projects are successful. Sometimes lighting designers don't discover the extent of the role they are expected to play in a project until they receive the 1:50 scale drawings. This can be a problem when estimating the fees. However, we have to give the best to our clients and bear in mind the whole time that we also have to relate to the end-user, and meet his needs as well,' he said.

■ Guildford Business Park, Surrey: *Metal halide lights are used to highlight the flat white elevations at night. This contrasts with the daytime scene where the blue-tinted glass cladding is dominant.*

It is a philosophy which obviously works. Peter has found that on the strength of the work he has carried out for one client recently, two further projects came his way.

However, for the foreseeable future there will continue to be a gulf between architectural lighting and theatrical/film lighting. It is, quite simply, a matter of money.

As Peter explained, 'On the architectural side we are used to working within very strict budgets. I think we are probably more inclined to look for value for money and the maintenance aspect when we start on a project.

'What we found with the theatrical side is that designers tend not to look at the sharp end of the business. They just don't have the hard and fast rules we normally have to abide by.'

"WE ARE INCLINED TO LOOK FOR VALUE FOR MONEY WHEN WE START A PROJECT"

Nevertheless, members of the Forum are doing their best to find common ground between all branches of the lighting industry, in the belief that all those who earn their living from lighting wish to see it raised in status and the standard improved. 'Eventually we hope that the divisions which currently exist between the various branches of the industry will vanish.'

■ Whitebrook Park, Maidenhead: *Metal halide downlights provide general lighting for the reception area to give an overall fresh, cool white light. Photos provided by Lighting Design Limited.*

■ Hotel Conrad, Dublin: *Low voltage fittings give an extra depth by uplighting the barrel vault's steel ribs and downlighting the planting on the steps.*

Members of the Forum include consultants such as: Lighting Design Limited and The Lighting Practice, while affiliates and 'friends' include Strand Lighting, Building Design Partnership, YRM Engineering and Middlesex Polytechnic.

The Lighting Forum can be contacted at:

29 Bedford Square, London WX1B 3EG on 071-631 1510, or contact Diane Goslar on 071-359 8783.

PREMIERE

NUMBER ONE IN ARCHITECTURAL LIGHTING

Despite the variation in lighting control boards, they all have one important factor in common. An operator.

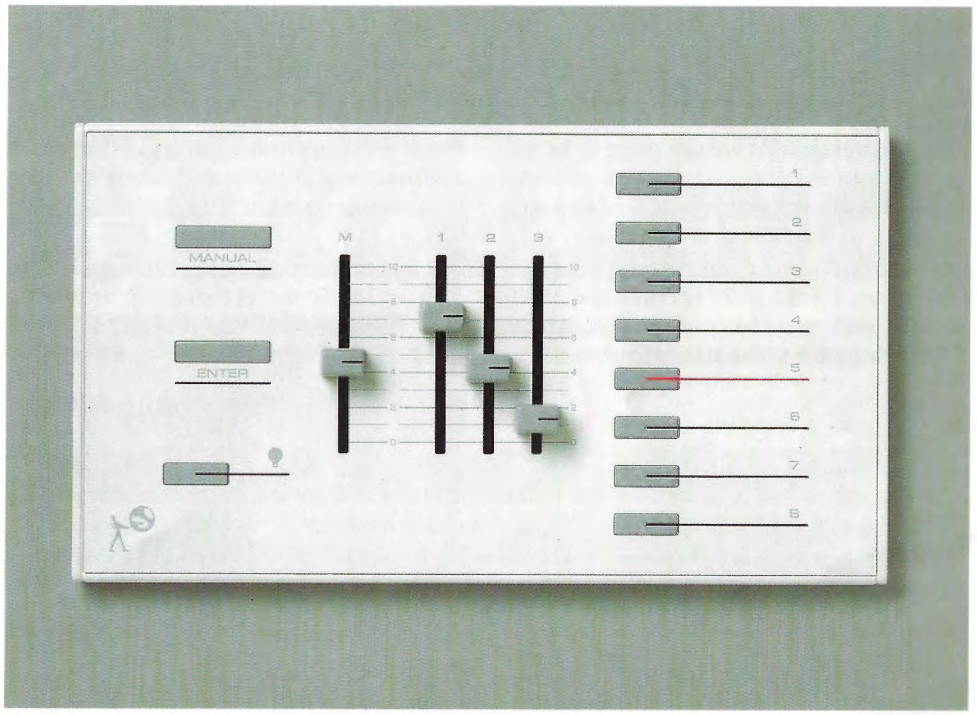
For designers working in architectural environments, creating dynamic lighting solutions requires the ability to create and record lighting scenes with sophistication equal to those of an entertainment board. However, the replay of cues is not in the hands of an experienced operator. Instead, it will be the user of a building, perhaps a waiter in a restaurant, the hirer of a function suite, or the building janitor who pushes a button to recall lighting scenes.

Lighting designers often interpret the architects' concepts in the design office, probably working from plans rather than within a completed building. A control system which combines the capability for imaginative lighting with simplicity of use is called for. Premiere — a new concept in architectural lighting control — is Strand's answer.

THE DESIGNER'S VIEW

Creativity is the key to Premiere's appeal to lighting designers. Because of its versatility, the lighting designer is able to allow his creative skills free reign without many of the constraints imposed by standard preset programmable systems. Stations can be changed or new ones added at a later date, without wiring changes. Detail programming decisions can be taken in advance of installation.

Sitting down at a Personal Computer (PC) in the design office, rooms can be assigned and labelled, the channels identified, lighting intensities set, and put into presets, operating times decided and the data stored on a 3½ inch disc for transfer to the system's programme module. Of course on site, the designer may wish to make a few changes once the real circumstances are viewed. No problem for Premiere, as the program can be modified there and then, from a remote hand-held terminal within the room, by using an off-line PC, or by a command station which even prompts the user through the re-programming steps.



The easy-to-use Premiere control panel showing lighting states for a variety of rooms.

Flexibility, combined with simplicity; Premiere provides the means for designers to realise lighting effects previously too complex or expensive to achieve.

THE TECHNICAL OVERVIEW

Premiere is a series of standard components linked together by a Local Area Network (LAN) to create customised lighting control for any building application. From hotels and restaurants, churches and cathedrals, to museums, theme parks and conference centres, Premiere can be planned to meet architectural lighting control needs.

Premier's C-LAN (Control — Local Area Network) is a 4-wire low voltage connecting data highway, carrying digital information; either the advanced SMX protocol or DMX512, between a central systems processor, remote control stations and dimmers supplying the lighting loads or relays in a building management system.

Control stations can be wired on to the C-LAN in 'daisy-chain' or star configurations and, because it is a 4-wire link, station types can be interchanged or added for system variations or expansions during the life of the building, without the need for re-wiring.

Heart of the system

At the heart of Premiere is a central processor module containing the system configuration which co-ordinates the operation and supervision of daily operations and diagnostics. Control system functions such as presets, labels for pushbutton LCD displays and current operational status originate from this central processor and can be additionally monitored by a remote PC or Building Management System.

The initial configuration of the system can be done in the field or on a PC running MS DOS 286 and then down loading the configuration via the optional 3½ inch floppy disk which can also be used for library storage. The user can, at any time, modify the current operation, presets and control stations on a real time basis.

The central processor possesses an astronomical time clock to execute fixed or variable event commands, which

can be programmed to occur on a specific day or date. Commands can be copied on to other days or dates, either individually or on a group basis, and time offsets to deal with changes for daylight saving (such as BST or GMT) are included.

Each processor has 128 channels available which can be divided across up to 32 independent rooms, with each room or area having up to 128 presets. The system is capable of driving up to 512 dimmers, or 96 dimmers for a smaller system.

Presets can be manually played back by pushing control station buttons, or automatically programmed using the processor events clock. Each preset can have an individual fade up or down rate. They can be linked together for 'looping' effects with programmable dwell times. These 'looping' effects can operate singly or continuously. Fade and dwell times can be programmed in one or two ranges — from 0.1 seconds to 30 minutes or 30 minutes up to 9 hours in 1 second increments.

In order to identify channel, room, individual preset or groups of presets, eight character descriptions can be assigned which appear on the set-up VDU monitor during configuration or at LCD (Liquid Crystal Display) Premiere control stations.

Premiere has programmable group functions or 'macros', each consisting of up to 50 steps. These macros are global, affecting control across the entire system, selected subordinate groups of rooms, or individual areas.

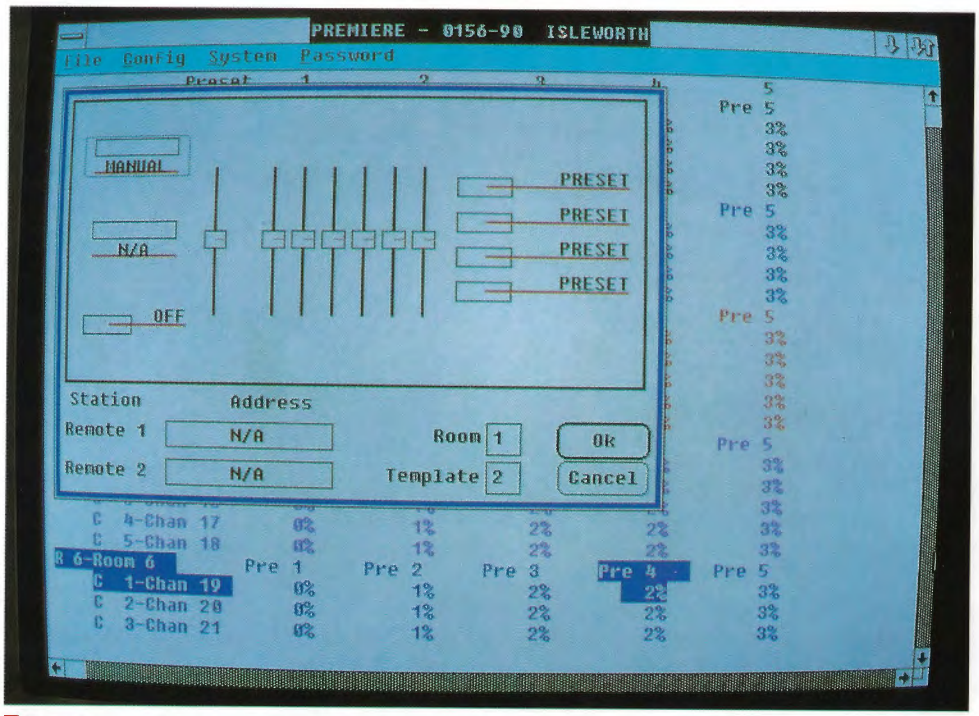
The macro functions can be initiated from control outstations, system time clock, supervisory PC or from other devices via the system RS485 Ethernet compatible input. The latter, for example, from a supervisory Building Management System (BMS) computer.

The ability to divide or combine rooms, for example in a hotel conference suite with partitions, is achieved by the systems' 'Combine' or 'Link' modes, which can be manually operated from the room partition switch panel, or by micro-switches located in partition walls.

Another useful feature is an input receptacle for a telephone modem, which can give remote or off-site access and control of the operating system.

Visible fastenings banished

Apart from the visual effect of the programs within the lit environment, control stations are usually the only visible elements of any architectural control system. For this reason, the design should be elegant and functional.



Premiere configuration — screen display for station assignment.

Premiere stations all have a clean soft white fascia, with all visible fastenings banished. They are available in various types, combining low profile push buttons and theatrical style faders. Thin red lines, which are illuminated by LEDs on selection of a function button, give 'at a glance' reference to the current lighting state or assist in locating station positions at low ambient levels or in blackout.

Each control station possesses its own independent address on the C-LAN, set by a rotary dial on the back of the station, with up to 16 stations allowable on each C-LAN. Control station operation functions are set up during the system configuration. Programmed assignments may be allocated to each station in groups or 'templates' of up to 16 functions. Again, these template groups may be manually activated at a local control station, or automatically by the system time clock.

Master stations have a 10 key numeric entry keypad to address channels, presets, rooms, channel levels and to set time clock functions. There are a further six function buttons provided to operate programming commands.

Programming actions are shown on a 16 character back-lit LCD display. Portable programming stations enable a lighting designer to set up 'looks' within the space he is lighting.

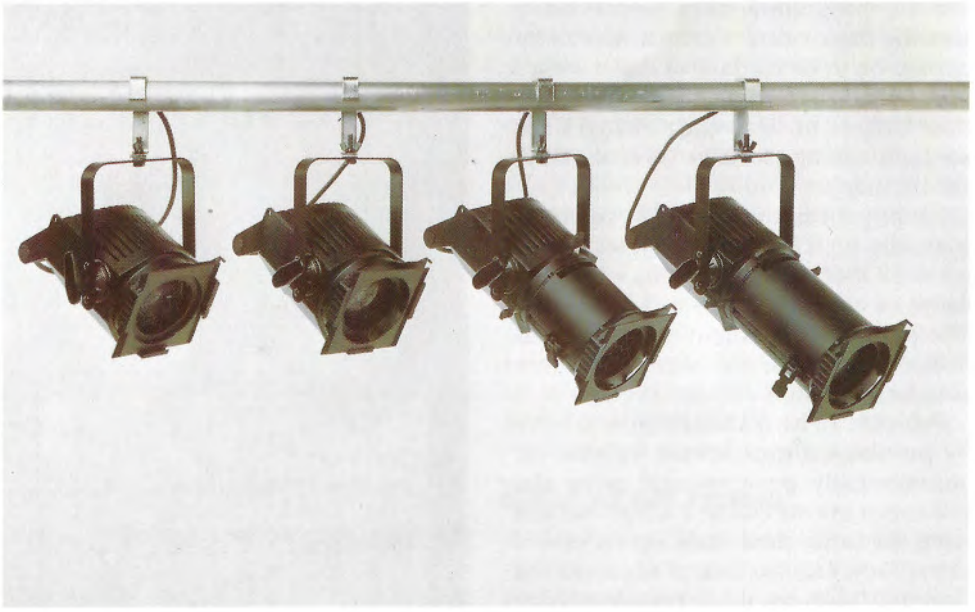
Other Premiere stations include a wide selection of familiar features — combinations of faders with preset pushbuttons, 'raise' and 'lower' and 'ON/OFF' functions, plus key switch options and special devices. A new LCD display station has eight push buttons, each of which can have a 16 character label or description assigned to it.

PREMIERE FEATURES:

- Addressable stations up to 16 on each control line
- Wireless control options
- 2 twisted pairs of wire for up to 16 control stations
- PC compatible, configuration and real time monitoring
- Client billing, monitoring
- Astronomic Time Clock
- Controls up to 512 dimmers
- 128 channels
- 128 presets per channel
- 3½ inch floppy disk storage (optional)
- Screwless faceplates
- 32 rooms of control per program module
- 10 Year Memory Loss Protection
- Photocell option
- Controls any type of dimmer
- Occupancy sensor compatible
- Control Station Templates
- Two simultaneous fades per room
- System Master Control
- Modem/Telephone (in Modules P-200/P-2020)
- Compatible with 256 relay Powermaster System
- RS485 Interface for BMS Interfacing

Premiere is already in use in the Moscone Center and the Sheraton Palace Hotel, San Francisco.

WHERE THERE'S WILL THERE'S A WAY



QUARTET - THE DESIGN STORY OF STRAND'S NEW LUMINAIRE RANGE

In the world of industrial design, one thing you can count on is variety. Not only do you have to find practical solutions to client's problems but you have to end up with a product which is aesthetically pleasing. Enter Will Bentall.

Will is a senior partner with London Associates and in recent months has been tackling the design problems associated with an injection-moulded cat feeder, an exhibition hall which folds out of an articulated trailer, surgical lasers and, most importantly, a new luminaire for Strand, the Quartet.

So how is a luminaire designed? How much market research is carried out to determine need and how does the basic shape evolve, let alone the workings?

Will explained, 'We like to become involved in a project as soon as possible — in this instance, it was as soon as Strand's R+D team knew what the optical path would be.'

In the case of the new Quartet range, the optical design has been based around a 650W lamp. It will replace the well-known Minim range, which has been limited to use with a 500W lamp.

Quartet project leader, George Patterson, is a member of Ian Thompson's R+D group at Kirkcaldy and prior to London Associates design involvement had already determined the fundamental optical arrangement and would later be responsible for the development and testing of every aspect of the product. Not only did optical systems for fresnel, prism convex and profile versions have to be developed, but thermal considerations, electrical safety and mechanical features all needed to be explored and proved before the first prototype could be built.

The market for such a luminaire is seen as small theatres and schools. What was needed was something to capture the affection of the lighting world, in much the same way as the old Pattern 23 and 123 luminaires had done in the 1950's.

Naturally enough, this called for total co-operation and constant exchange of information between Will and the Strand R+D department in Kirkcaldy, Scotland, where the practicalities had to be assessed and workable solutions found.

Will began the design with basic layout drawings of the optical systems.

He said, 'I have to imagine it as an assembly. In this case it was to be a range of products, of which there are four, so four sets of information would be needed.

'As soon as we know the requirements of the various pieces we start to discuss how the range of products is broken up into components. We managed to get one lamp housing to suit the whole range.'

To illustrate the complexity of the problem. Will produced an exploded drawing to demonstrate the complexity of the assembly and the vast number of parts.

One of the instructions from Kirkcaldy was to reduce greatly the number of components in the new luminaire.

Will explained, 'We had to stand back and concentrate on making four different items in one product range.'

The result was that all four luminaires in the range have a common lamphouse. Having the same rear end meant that the production line would be taking large volumes. This allowed the production team to allocate a bigger investment in tooling for the lamp house components than would otherwise have been possible.

Varying methods open to the team included: die casting, extrusions or mouldings. The final decision was to opt for aluminium die-casting for the rear end and extrusions for the front. Having settled this point, the next stage was to look at the end-user needs and then work as much of that information

Will Bentall

and detail into the die-casting as possible, to cut the number of basic nuts and bolts. Production manager Bill Crawford's role in the Strand team took on a special responsibility for planning the introduction of Quartet into production at Kirkcaldy.

Strand's product manager for Quartet, Mike Cawte, said, 'There was a great deal of teamwork throughout the project. It wasn't just a question of Will producing the design and handing it over to us. We were constantly back and forwards, sharing ideas.

'Every credit must be given to the R+D team who not only provided a valuable input in the initial creative stages of Will's work but then went on to take total responsibility for translating the agreed design into the product you see today.'

"THERE IS NO REASON WHY A BEAUTIFUL PRODUCT SHOULDN'T BE CHEAPER THAN AN UGLY ONE AS LONG AS IT IS WELL ENGINEERED"

Prior to producing scale wooden models to use in the final debate on physical appearance of the Quartet, Will spent many hours talking to lighting technicians and seeing at first-hand how they handle lamps in a working surrounding. This information was crucial in deciding, for example, how the housing would open to allow lamp changes.

Will explained, 'If you have a series of products on the market with similar optical properties you have to prove that your product is better than someone else's. The luminaire has to survive on a number of points. Above all it has to be good at getting the light onto a stage. If your luminaire doesn't look as good as someone else's, then people will make a very quick judgement.

'A similar judgement can be made if the price is too high. The whole time in the design stage you are literally working to design money out of it.

'There is no reason why a beautiful product shouldn't be cheaper than an ugly one, as long as it is well engineered. We also wanted to think that in five years time, the Strand Quartet will still be the one that people want to pick up.'

As to the overall shape of the new luminaire, Will said, 'A lot of the shape has come as a result of the lamp tray pivot point and the need for easy lamp replacement when up a ladder.

'The ideal pivot position will provide clearance for lamp and other components and happens to be located in the cooler lower part of the lamp tray, providing an ideal position for incorporating the handle.

A plastic moulding was determined as the most effective way of isolating the operator's handle from heat and power, allowing air to circulate around areas liable to retain heat and providing a suitable access point for the cable.

Given that there is so much input from Strand R+D staff, why use an outside design consultant?

Will explained, 'One thing we are very good at is visualising the end product, while someone who is working in detail the whole time can find it difficult to stand back and take an overall view. Then if you change one thing on the design the effect on other components can be co-ordinated. The arrangement worked very well without compromising the design.'

● *London Associates have won a major design award this year, the British Design Award, for their work on the new Planet Safe for Chubb. This is a fire and security safe weighing half the amount of traditional safes.*

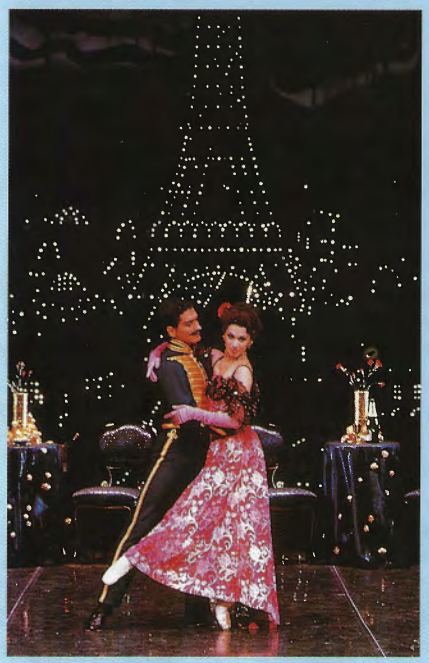
■ *Strand's design team: draughtsman Dougie Hunter (left) and design engineer George Patterson on the CAD system.*

QUARTET - A LOOK AT THE FINER POINTS

- Quartet sets new standards in luminaire design and construction
- Exciting style derived from ergonomic and operational requirements
- Designed to conform to IEC 598 — 2.17, the international standard for luminaire safety
- Bridges the gap in performance terms between Minim — which it replaces — and Prelude
- Outstrips Minim in terms of quality and features
- Available in four models — 22/40 Variable Profile Spot; 25° Fixed Angle Profile Spot; Fresnel and PC Spot
- Profiles fitted with beam distribution adjustment
- Smooth lens adjustment
- All models incorporate an integral handle arrangement in advanced engineering plastics to provide a comfortable operating temperature and access for input wiring
- Handle position provides pivot point for lamp tray to give excellent access for lamp replacement

DANCING THE LIGHT AWAY

Taking a show on tour and maintaining your normal high standards of lighting could prove difficult for even the most experienced Company. Fortunately for the Manchester-based Northern Ballet Theatre, it is a problem they have overcome, with Strand expertise.



Graciela Kaplan and Francesco Villicich trip the light fantastic in the Northern Ballet Theatre's production of Liaisons Amoureuses. *The Company's tour of the UK, with its new Strand 'touring' Gemini 2+ system included a performance before HRH The Princess of Wales. Lighting design was by Paul Pyant.*

The Northern Ballet's UK tour earlier this year was carried out with the aid of a 'touring' Gemini 2+ system, plus a designers rigger control. 156 ways of Act 6 mux output dimmers were packed into five dimmer flight cases with their own mains distribution and built-in desk distribution system. This allows desk and dimmers to be used anywhere in the world.

The Gemini 2+ was handed over to the company while at Sadlers Wells, London and became a firm favourite with the Ballet's 150-strong technical team.

THE GALAXY LOOKS GRAND IN SWANSEA

As part of the customer service, Strand representatives ran a 'familiarisation' course for technical staff to explain how the new lighting controls can be used to maximum effect.

When in doubt ask the experts — that is the maxim which has paid off handsomely for Swansea's Grand Theatre, where existing Strand Lighting controls have been upgraded to make the theatre one of the most technically advanced in Wales.

When the Grand's Galaxy control system became due for re-evaluation, theatre technical staff, working in conjunction with Strand distributor Light Relief, of Cardiff, carried out a study of theatres to see what was available on the market.

The conclusion they reached was that the best solution would be to upgrade the existing system to a Galaxy 3. Existing Strand Permus dimmers have been converted by Light Relief to a multiplex operation and additional dimmers can now be provided on stage for complex productions.

The Grand's refurbished system now includes: theatre and standard playback, programmable effects, 20 preset masters, an alpha keyboard, twin colour VDU's, a printer, twin output modules, twin channel modules and full back-up.

One of the benefits of the Galaxy modular approach is that the system has the ability to be upgraded and reconfigured. It can also be expanded to control PALS fixtures and colour change units.

Note: *The Grand Theatre, opened in July 1897, is considered to have had 'the longest and most distinguished history of all Swansea theatres'. It has been home, at various times, to productions including Sir Henry Irving, Ivor Novello, Jessie Matthews, Kenneth Williams, Richard Burton, Edward Fox, Pat Phoenix and Marianne Faithfull.*

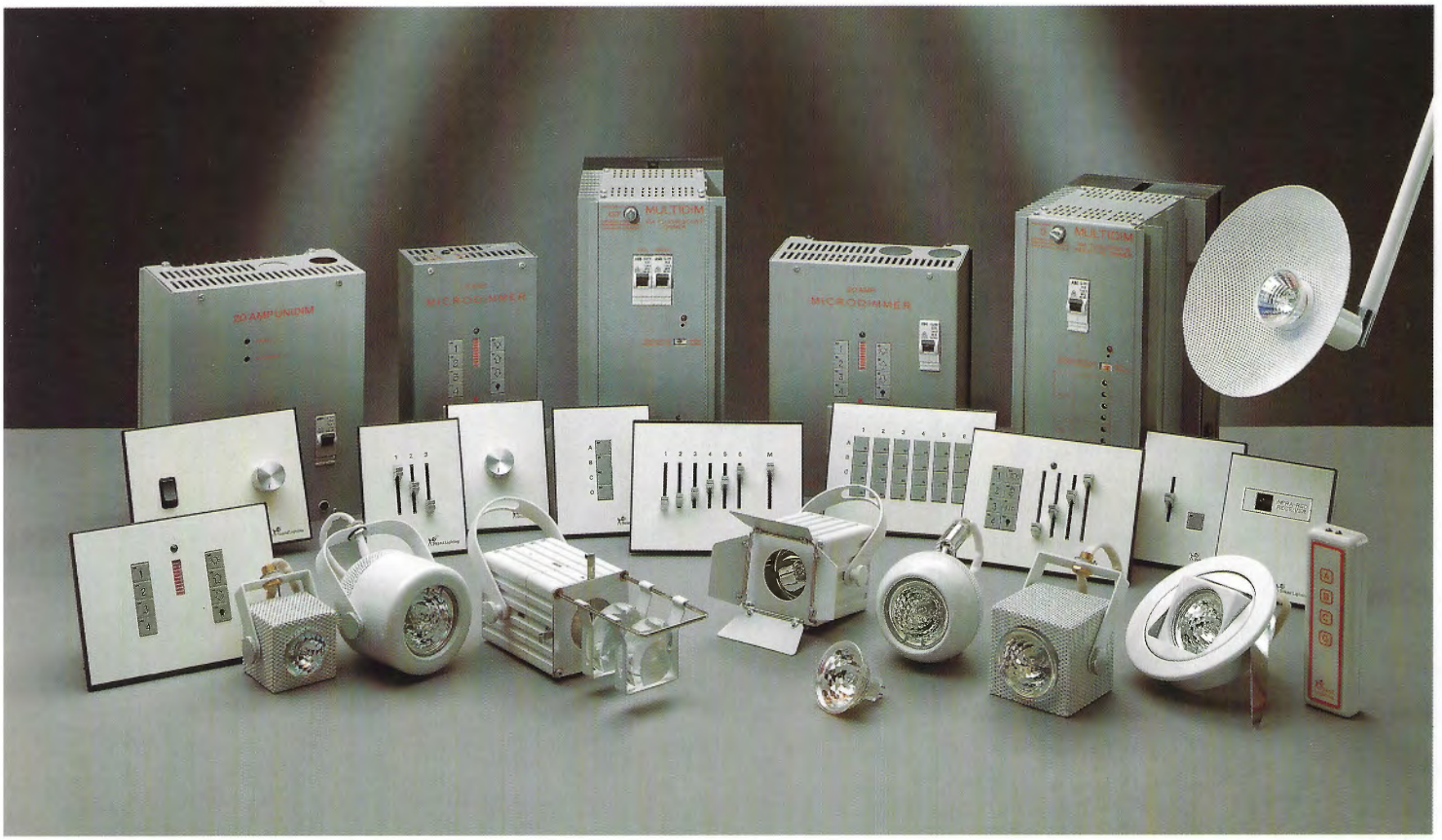
TELETHON STINT FOR GALAXY

British television's annual charity fund-raising marathon, the *Telethon*, staged over the May Bank Holiday weekend, owed its lighting excellence to a large input from Strand dealer Luff Light and Sound.

The *Telethon*, which involved continuous live television, was staged at the London Arena.

Luff Light and Sound provided 24-hour a day cover from its technical staff on-site.

Lighting control was by way of 144-channel Galaxy system.



HOMING-IN ON THE RANGE

Everything you need to launch your architectural lighting schemes into the 1990's — that's the promise with this, our current range of dimmers, control stations and luminaires.

From left to right they are:

Back row: 20 Amp Unidim; 5A Microdimmer; fluorescent Multi-dimmer (manual); 20A Microdimmer; tungsten Multidim (preset) and the Stalk Spot with 'saucer' attachment.

Middle row: Finesse dimmer; 3-gang fader; 1-gang rotary; 1-gang preset; 6-gang fader and master; 6-gang preset; Microdimmer preset and 4-fader; take control and infra-red receiver; and an infra-red transmitter.

Front row: preset select and bar-graph; Minicube; Bullet; Minispot profile, with an example of a dichroic 12V lamp, Minispot 'barndoor'; Eyeball Spotlight; Cube Spotlight, and a 'wall-washer' downlight.

For more information on these products, please complete the relevant card at the back of this issue of *Lights!*.

A MIDSUMMER LIGHTS DREAM

A new Strand lighting installation at a private school in Buckinghamshire is so advanced that it's now on a level with many provincial theatres.

Now the investment by the school in new technology is immediately starting to pay off. For already Marshalls, the amplifier and loudspeaker manufacturers, have hired the school's hall for a promotional event and the school has staged a successful production of* A Midsummer Night's Dream, *using the lighting to full dramatic effect.

Swanbourne House school was founded in 1920 by a former house master at Bradfield College, Lionel Evans. On an estate owned by Cdr. John Freemantle, son of Lord Cottesloe, it is now a co-educational prep school with about 50 girls and 260 boys. There is also a pre-prep school, so the complete age range of the pupils is from three and a half to thirteen and a half. From there, by way of the Common Entrance Exam, pupils go on to schools such as Oundle, Bloxham, Rugby, Charterhouse, Stowe, Harrow and Eton.

Strand representative Brian Myers was on hand to give expert advice which led to the school installing Tempus controls and dimmers, plus four bars of luminaires.

English and drama master Paul Wakefield explained, 'We feel that we are probably the envy of many schools now, with such a professional lighting system installed.'

THE MX RANGE IS STRAND LIGHTING'S LATEST TWO SCENE PRESET+ MEMORY CONTROL BOARD. A NUMBER OF SPECIFIC DESIGN GOALS WERE SET FOR THIS RANGE. IT SHOULD BE: SUITABLE FOR USE IN ALL COUNTRIES WITHOUT MODIFICATIONS; SIMPLE TO OPERATE; POWERFUL; RELIABLE AND VALUE-FOR-MONEY. HERE WE SEE HOW...

RELIABILITY IS A DESIGNER FEATURE

Designing a manual/memory control desk for use in smaller venues presents the engineering team with a host of problems. Such a board must be capable of doing many things while remaining virtually foolproof and totally reliable at all times.

Building-in the many features the system needs is relatively simple. Designing-in reliability is another matter. And yet reliability is the feature of Strand's new MX range which crops up time and time again.

But first — what is the MX range and what does it do?

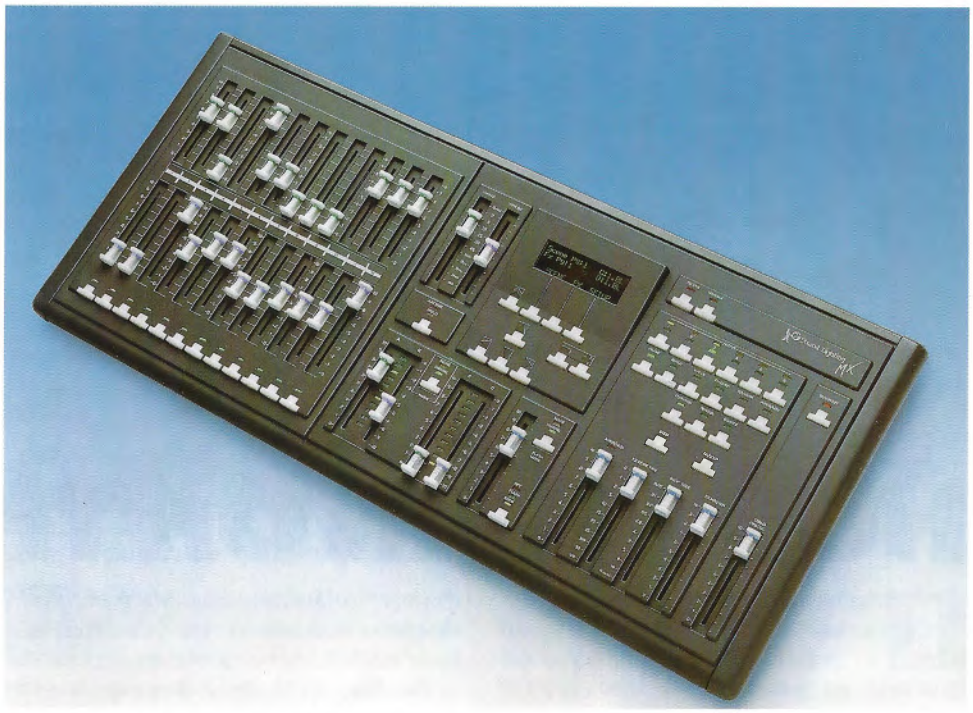
Its role is to meet the need in the market for an international-standard versatile board suitable for smaller venues such as clubs, pubs, studios and theatres. It blends both manual and memory controls in one easy-to-use system.

Not surprisingly, it is the smaller venues which often have to 'accommodate' — although until now, 'suffer' might have been a more appropriate word — the widest possible range of acts and uses, often at the hands of a variety of operators with varying levels of experience.

This is where MX comes into its own. Part of the design brief was that MX should be simple to use and international in operation. Software included as a standard package with MX comes in English, French and German; it is versatile enough to offer up to 48 channels of two-scene preset faders, electronic patching for up to 512 dimmers, allows rapid recording of up to 192 memories in four pages and has 24 real time programmable effects.

One of the biggest boons for the 'small band' level of use is that a MIDI interface allows the playback of lighting states and effects from musical instruments. Performers can pre-set their own lighting 'looks', without the need for a lighting operator.

While they play their music the MIDI signals may control changes in lighting rather than just the music beat, which until now has been the norm in discos and concert halls.



Built-in reliability — the MX control board.

As for the reliability of MX, this was designed-in at the earliest possible moment, with each component part being exhaustively tested even before the R+D stage was completed. This ensured that when MX was finally put together, there would be no question marks over the reliability of any of the electronics.

The product specification said that the switches had to operate mechanically and electrically for at least 1 million operations.

A test was carried out where a sample of ten of each selected switch was systematically bashed with solenoids four times a second until destruction. A tight mechanical size criterion limited the range to approximately half a dozen types. Most were expected to last the night. Only two did. Some fell by the wayside before a tenth of their specified life. Fortunately there were survivors. The type selected in fact lasts over two million operations before destruction.

FADERS

The faders were also required to operate through a long trouble-free life. The target here was 100,000 full cycles. A ruthless test treadmill was constructed. Several samples of the type selected were cycled for days on end. Unfortunately during one test, in the middle of the night, the test rig seized. The rig was worn out, but proved that the faders would last around 250,000 operations before giving up. Even once seized they still work electrically!

ELECTRONICS

Much is written about the perils of unreliable electronic systems and the effect of electronic smog. The impending EC legislation in 1992 is another pressure to build reliability and electronic cleanliness into our products.

The main threat to a lighting control system is from mains-borne interference. This can be aggravated when the dimmers are placed close to the control, and connected to the same

power outlet. Some countries and some installations are more troublesome than others. Knowing that *MX* would be toured from venue to venue, country to country throughout the world, R + D engineers needed to exceed the absolute worst of all conditions.

Conveniently Strand can reproduce these environments in the lab. The environmental specification (based on IEC 801-4) stated that tests had to exceed 2000 volts of very fast risetime transients on the mains connected directly to a complete system, hooked up to dimmers.

During the test, special precautions are taken not to shut down the whole company by upsetting every computer in the building! The specification, if exceeded, makes the unit almost totally immune.

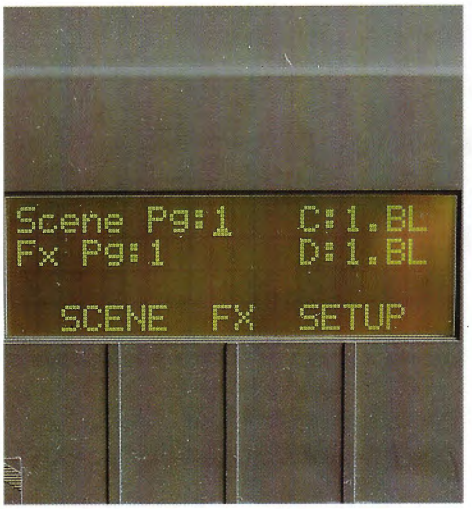
Should there be *really* serious problems, causing everything in sight to fail, many safety features are incorporated into the electronic design.

There is the ubiquitous watchdog timer, which the software has to 'kick' several times a second to prevent the processor from being reset, and more importantly, a unique memory locking facility, which actually prevents the processor from scrambling the valuable information that has been recorded.

Furthermore, in the event of this data being corrupted, the user is informed because each scene etc is individually checksummed. Every time you switch on *MX*, it checks the validity of the stored information.

The other main electronic assistance is provided by comprehensive power failure detection circuitry. This ensures that the processor is always warned in good time if the power droops or fails completely, allowing it to 'clean up' after

Richard Farthing, Project Team Leader.



MX LCD display.

itself, leaving no tasks undone when the power is restored. These are just a few of the special features of *MX*.

One important feature of the control PCB is that the majority of components are surface mounted. This assembly method was used for two reasons:

Firstly, using conventional methods it would have been impossible to pack the functionality of the control section into one PCB; this would have made manufacturing and assembly more difficult, and affected reliability through use of more interconnections.

Secondly, this method of manufacture is more reliable than conventional methods, because it is more difficult to make a good surface mount PCB. A bad one will never scrape through test, because it simply won't work. The process is therefore a catalyst for all sorts of quality control. These are, briefly, the use of a BS5750 approved process, automated assembly, and automated test.

SOFTWARE

Reliability can be designed into software too. One of the keys to this was to adopt a system design with easily understood modules and high level interfaces.

This goal was achieved by using the C programming language and the debug tools on SUN workstations. Less than 1% of the code in *MX* is written in error-prone assembler, meaning that it could be developed on a workstation without the hindrance of the actual *MX* electronics.

Approximately 11% of the total code resident in every unit is purely for test purposes. Most functions use the low level interface software as well, so test routines amount to quite a large total. As well as allowing the factory to test the units thoroughly, the user may access most of these routines via the menu. If there are any serious faults detected these are logged and may be printed out, allowing us to track any faults quickly in the field. Furthermore, 18 of the 32 possible tests can be and are performed every time the system is turned on.

The use of standard interfaces in the software enabled Strand to compile easily the menu software to run on a PC and send demo disks around the world before launch.

It was also decided to use the MS-DOS disk format for the memory card, the budget not, unfortunately, allowing the luxury of a real disk drive. This feature means that newer systems will not make old data obsolete. Research shows that third party access to stored data is very important for the customer. By using a suitable third party PC plug-in card drive, the user can access his data meaningfully.

FEATURES OF THE MX 12,24,48

- 12, 24, or 48 channels of two scene preset faders
- Electronic patching for up to 512 dimmers
- Flash buttons operate in solo, pile-on, or inhibitive modes, and at selected levels
- Split crossfader with LED display
- Rapid recording of up to 192 memories in four pages for playback on scene masters or via the Sequence Fader
- Split time fader for timed crossfades between two scene presets and/or Sequence Fader
- Live or Blind memory modification
- Unique 'Hold' feature for two scene operation in combination with Scene Master operation
- 24 real time programmable Effects with pre-programmed or improvised control
- Pre-programmed Effect Types including Chase, Build, Cycle, Flicker, Random and Audio/MIDI input
- MIDI interface permitting playback of lighting states and effects from musical instruments
- Menu driven 4 × 20 LCD backlit display
- Software selectable multiplexed outputs: SMX, DMX512, D54, AMX192 all included in the standard console
- Optional Memory Card for library storage
- English, French and German language software included as standard.

SMX A NEW PROTOCOL FOR PROFESSIONAL LIGHTING

A debate is taking place amongst an elite group of research and development specialists, concerning the future of communications standards for professional entertainment lighting equipment.

To many interested lighting enthusiasts, the talk of data transmission speeds, refresh rates and the use of various acronyms, may suggest the issue is merely of academic interest.

But ever since Strand's David Bertenshaw presented his SMX paper, proposing a new digital protocol to the 1989 USITT conference in Calgary, Alberta, the question of communications standards has taken on a new importance. So what is SMX and why do we need it?

SMX stands for Strand MultipleX, a new protocol devised by Strand's British and American R+D experts and published openly as a specification for the entertainment lighting industry to implement. In simple terms, it enables equipment such as dimmers, control desks and automated luminaires from diverse suppliers to communicate or 'talk' to each other. But why a new standard?

INTENSITY

To understand this, consider how lighting control desks enable us to adjust intensity levels at all. At its simplest, an analogue system comprises a manual control desk, wired by signal cable to a dimmer pack, in turn putting out a variable voltage to power luminaires.

Moving a fader on the control desk will create a DC voltage output between 0 and 10 volts to control directly the firing angle of the dimmer's thyristor and the energy to the lamp.

It follows that each output will require its own dedicated wire to the dimmer pack. Fine for the smaller stage and studio situations or for basic manual architectural control, but very clumsy for large numbers of channels. Enter the multiplex solution.

Multiplexing is a technique which allows many electrical signals to be transmitted along a single wire in sequence. Signals representing different dimmer levels can be transmitted one after the other many times a second along the same wire. The potential wiring nightmare is elegantly resolved.

With multiplex control, fader levels are converted into multiplexed signals by sampling each fader such that each sample represents the intensity of the light. These samples of each signal in turn are transmitted along the control wire.

At the dimmer, a demultiplexer decodes the signals and routes the correct control voltage to each dimmer sequentially. The rapid sampling of the dimmer signals ensures that lighting levels keep up with the changes, as they are required; for example, for a fade or when a potentiometer is moved.

Between signals, the demultiplexer holds the levels so there is no flicker. Inevitably, the evolution of multiplexing has resulted in different and generally incompatible standards between manufacturers. Strand has used systems such as D54 and AMX 192 for example.

UNIVERSAL

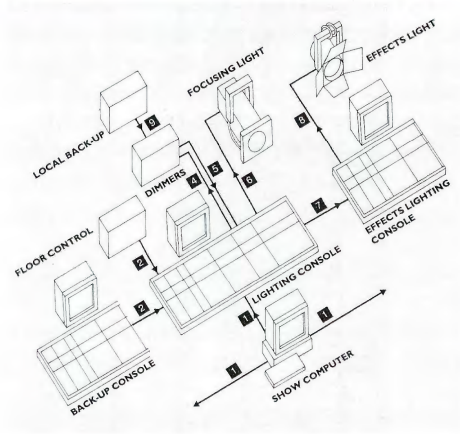
A move to regularise this potentially chaotic situation and provide a universal standard for multiplex communication resulted in the USITT Dimmer Standards Committee publishing DMX 512.

The ready acceptance of DMX 512, particularly in the USA, has demonstrated the benefit of a common standard but its limitations are perhaps inherent in its intention of providing a lowest common denominator solution to digital communications.

Its original purpose, to provide a digital alternative to the analogue multiplex scheme described above has been well met. DMX 512 benefits have been an easier and more stable system to install with greater immunity to noise interference.

However, despite the original designers leaving a 'window' open for expansion, its very focused goal as a console to dimmer link has caused several technical inadequacies, leaving it unable to be developed for the changing needs of the market.

Its degree of precision, error checking capability and security of communication, bandwidth options, bi-directional communication, logical room on the data link and message intelligence are all found lacking for various reasons.



PROGRESS

The need to overcome such shortcomings are found in progress with lighting equipment itself. We are no longer concerned solely with light intensity control — a single parameter. Motion control for equipment such as Strand's award winning PALS System demonstrates the need to control not only intensity, but pan, tilt, focus and colour. And for automation to evolve, control capabilities must inevitably extend to more functions.

Strand engineers have already publicly demonstrated the technical feasibility of bi-directional communication for PALS using the new SMX protocol. Increasingly the need to communicate back to the operator will be demanded in order to liberate the full performance of new equipment such as Strand's EC90 digital dimmers (see *Lights!* volume 1 issue 2).

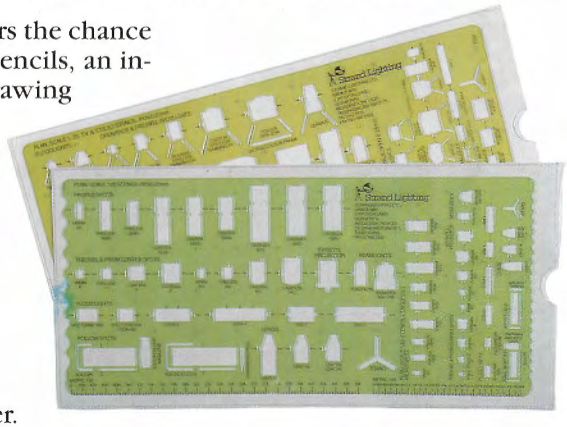
In short, there is a need to communicate considerably more data; both commands to the lighting equipment and status and confirmation reports back. Such communication requires rigorous standardisation in the protocols to carry the data, separated from extensible protocols which allow current and future data needs to be addressed.

A standard which can handle this now and still be expanded for data requirements as yet unforeseen is the reason for SMX. As the debate continues to Britain's PLASA conference, the universal adoption of SMX represents an opportunity to bring order to the future development of the entertainment lighting industry.

SPECIAL OFFERS

ONLY TO 'LIGHTS' READERS

Lights! offers readers the chance to buy designer stencils, an invaluable aid to drawing lighting plans. These clear, flexible engineering grade plastic stencils include outlines for all Strand luminaires, scale rule edge and choice of scales of 1:25 or 1:50 and supplied complete with a PVC storage wallet.



See insert card for order.

'LIGHTS!' SWEATSHIRT

With the end of summer in sight (at least in the Northern Hemisphere), here is your second chance to obtain a stylish Strand sweatshirt before the colder weather arrives with a vengeance.

Styled in the USA, the fleecy-lined polyester/cotton sweatshirt is available in large sizes for that modern generous look and is suitable for both men and ladies. The specially-chosen 'Lighting Crew Red' colour, plus the tastefully highlighted Strand Lighting and *Lights!* logos are sure to make you stand out in the crowd.

To order, simply fill in the coupon below, cut-out and send with your cheque or postal order for £11.80 to: Sweatshirt Offer, Strand Lighting Ltd., Grant Way (off Syon Lane), Isleworth, Middlesex, TW7 5QD.

Offer applies to UK only. Please allow 28 days for delivery.

To: Sweatshirt Offer
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Please send me.....'Lights!' sweatshirt @ £9.90 each, plus £1.90 each to cover post and packing. Available to UK readers only.

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WORLD-WIDE CONTACTS

UNITED KINGDOM

David Brooks, Strand Lighting Limited
Grant Way, Syon Lane, Isleworth
Middlesex TW7 5QD, United Kingdom
Telephone: 081-560 3171
Telex: 27976. Fax: 081-568 2103

AUSTRALIA

Rod Gilbert, Strand Lighting
264-270 Normanby Road
South Melbourne, Victoria 3205, Australia
Telephone: (03) 646 4522.
Fax: (03) 646 5020 (Int). (03) 646 6727 (Ext)

CANADA

Peter Rogers, Strand Lighting
2430 Lucknow Drive, 15, Mississauga
Ontario L55 1V3, Canada
Telephone: (416) 677 7130. 1-800-387-3403
Telex: 06-968645. Fax: (416) 677 6859

FRANCE

Bernard Bouchet, Strand Lighting France S.A.
26 Villa des Fleurs,
92400 Courbevoie, Paris, France
Telephone: (1) 47 88 66 66
Telex: 611921 F/Strand F. Fax: (1) 43 3371 75

HONG KONG

Phil O'Donnell, Strand Lighting Asia Limited
802-4 Houston Centre, 63 Mody Road
Kowloon, Hong Kong
Telephone: (852) 3-685161
Telex: 44953. Fax: (852) 3-694890

ITALY

Andrea Molinari, Strand Lighting SpA
Divisione Trading
Via Paola Albera 82, 00181 Roma, Italy
Telephone: 06-785 3544
Telex: 620178 Luxian. Fax: 06 780 9018

USA

Bill Groener, Strand Lighting
18111 South Santa Fe Avenue
PO Box 9004, Rancho Dominguez
California 90224, USA
Telephone: (213) 637-7500
Telex: 664 741. Fax: 213-632-5519

USA

Rick White, Strand Electro Controls
2975 South 300 West
Salt Lake City, Utah 84115, USA
Telephone: (801) 487 6111
Fax: (801) 466 1003

WEST GERMANY

Heinz Fritz, Strand Lighting GmbH
Salzbergstrasse 2
3340 Wolfenbuttel-Salzdahlum
West Germany
Telephone: (05331) 30080
Telex: 95641. Fax: (05331) 78883

Why Strand's new EC90 is making the news...

ITN, London Weekend Television and BBC South West are among the first to specify and install Strand's new EC90 digital dimmer. And many other leading television companies, theatres and opera houses are following in their footsteps...

Why?

Because digital dimming offers improved performance, greater flexibility and higher reliability than ever before offered in a dimmer.

- Full system integration when used with a Galaxy control system.
- Dimmer status/fault reporting-back facility.
- Faster response than analogue systems.
- No potentiometers to trim or adjust.
- Output curve remains constant without maintenance.
- Automatic sensing of input protocol (EC90 accepts DMX512, AMX192, D54 and SMX).
- Selection of output curves.
- Maximum output voltage can be selected for any dimmer or group of dimmers.
- Up to 32 lighting presets may be recorded and stored in the dimmer rack.
- Electronic patching simplifies circuit to dimmer numbering.
- Patented load cable compensation feature.

With features like these, it's no wonder that EC90 is making the news. For more information, contact us today at the address below.

Strand Lighting

Strand Lighting Limited
Grant Way, (Off Syon Lane), Isleworth, Middlesex TW7 5QD, United Kingdom.
Telephone: 081-560 3171. Telex: 27976. Fax: 081-568 2103.

See page 15 for other Strand Lighting offices.