

Strand Lighting

LIGHT PALETTE 90 MEMORY LIGHTING CONTROL DESKS



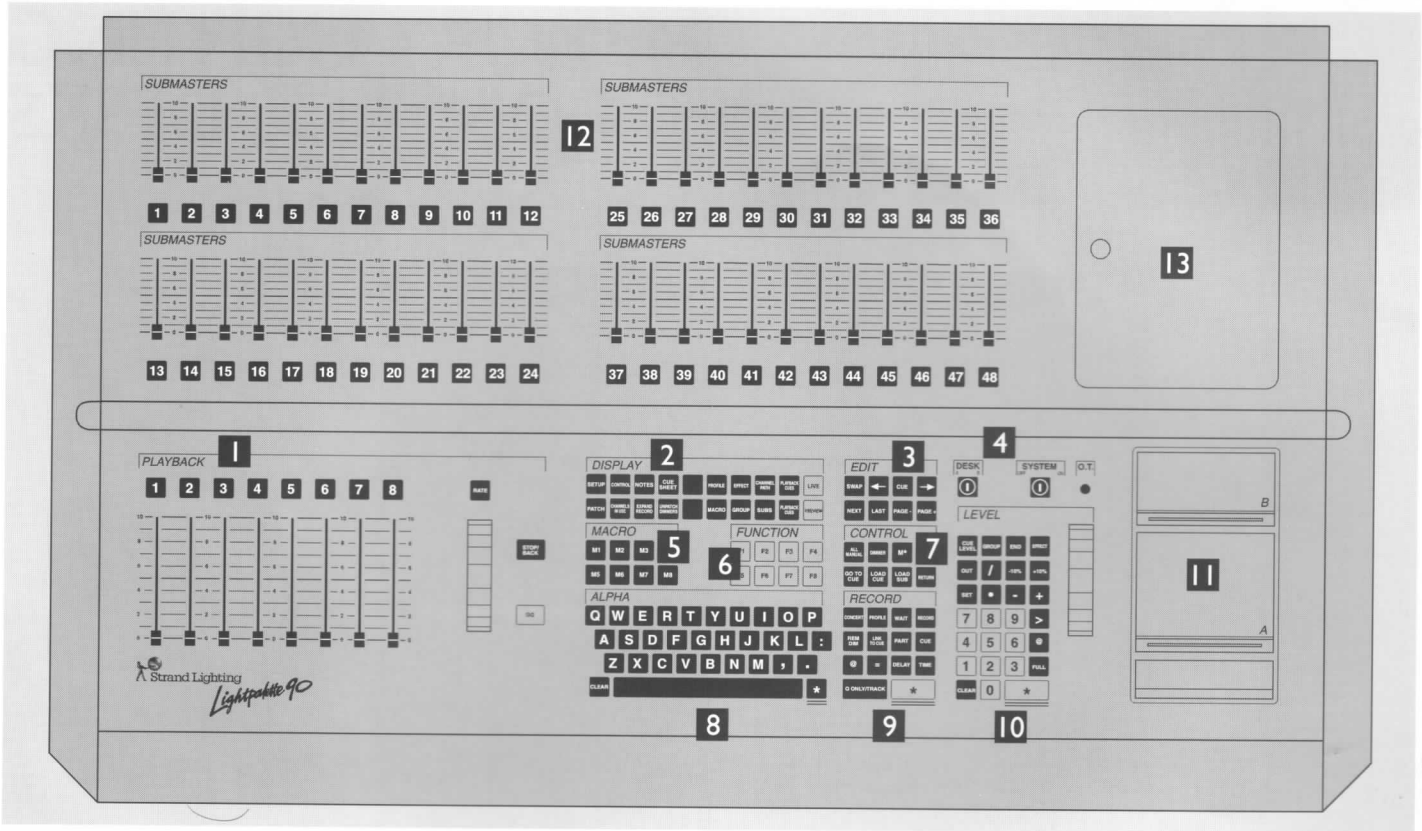
Representing a significant advancement, the Light Palette 90 has all the features expected from the very top end of the world's control systems – and much more.

The Light Palette 90 was developed with the critical input of lighting designers, consultants and operators to increase the versatility and the speed of programming to match and exceed the demands of today's sophisticated world market.

- Up to 4032 channels and dimmers
- Average 600 memories
- Up to 128 simultaneous fades
- Eight timed or manual playbacks
- Cue or part cue stop, reverse or manual override
- Cue or part cue playback rate override wheel
- 24 or 48 submasters
- Bank loading of submasters
- Programming of submasters by flash button
- Full proportional dimmer patching
- Up to 64 user definable dimmer profiles
- Alphanumeric description of individual dimmers
- 999 programmable effects
- 99 steps per effect
- Submaster control of effects
- Two high resolution monitors
- 3.5" Disc drive
- Integral alphanumeric keyboard
- Notepad display for messages and reminders
- Macro keys
- Function keys
- DMX512 and AMX192 Dimmer protocols
- Remote cue signals for PALS units
- Dual electronics tracking backup option
- Self diagnostics

Lightpalette 90

Light Palette 90 Memory Lighting Control Desk



A Guide to the Control Desk

- 1 **Playback** – 8 playback faders are logically grouped in pairs for split fades or 8 part cues. A rate wheel allows control over individual or global fade times. 128 simultaneous cues are possible.
- 2 **Display** – The Light Palette 90 offers fast access to information such as Channel Path, Playback Submasters, Channels In Use, and Unpatched Dimmers.
- 3 **Edit** – Allows command strings to be edited, including Last, Next, Page -, Page+ keys for quick information access.
- 4 **Keyswitches** – For system on/off and main or reserve electronics.
- 5 **Macros** – 8 user programmable macros containing up to 32 keystrokes provide for automatic execution of setup and playback information. Macros can be executed from cues.
- 6 **Functions** – 8 keys drive screen-based legends for direct access to commands.
- 7 **Control** – Take Control, Manual Override, and Load functions are immediate actions.
- 8 **Alpha** – Alphanumeric access to dimmers and labeling plus a Notes display.
- 9 **Record** – Allows quick recording of cues with multiple parameters.
- 10 **Level** – Channel, cue, group, submaster, and effect information can be brought instantly on stage and manipulated, all in the same command string. -10%, +10% keys and a level wheel are provided.
- 11 **Disc Drives** – Main and reserve 3.5" disc drives using high-density discs for library storage of all system information.
- 12 **Submasters** – Up to 48 submasters with programmable bump buttons.
- 13 **Aux Panel Location or Disc Storage** – Houselight controls can be mounted directly on the console face.

Specifications

General Description

The Light Palette 90 is designed and manufactured by Strand Lighting for the control of performance lighting equipment. The system supports up to 4032 dimmers on 4032 control channels via a maximum of seven dimmer processing cards, each controlling either 512 DMX512 dimmers or 576 AMX192 dimmers. The Light Palette 90 can be easily expanded at any time to drive additional dimmers and channels by the plug in addition of a dimmer processor card up to the maximum number allowed. DMX512 and AMX192 protocols are supported by the standard system with no adaptation or customisation required.

All major electronic components are plug in and housed in an Electronics Tower. Communication from the electronics to the console is via a high speed auto-baud serial communications network.

Each Electronics Tower may support up to three separate Control Consoles and three Handheld Remote Controls. Each Console will drive two high resolution EGA standard monitors. Control Consoles may be mounted some distance away from the Electronics Tower and may be used as Main Control and Stalls or Studio Controls simultaneously. Each Console is furnished with command keypads, playback controls and 24 or 48 submasters. A designated Main Console is provided with one or two 3.5" disc drives for library storage. Space is provided on the control surface for additional custom auxiliary controls. Submasters may be provided separately in a submaster "outriggers" console, and may be located in a remote location from the Main Console.

Continues overleaf

Specifications

General Description continued

The internal data processing programme is stored in non-volatile Read-Only-Memory. The system does not require the use of any peripheral storage or retrieval

device to function. User programmed information is stored in Random-Access-Memory and is held for 30 days by a battery.

Standard Features

- **Console Surface** The Console consists of logically grouped keypads, level wheel and keyswitches. The keypads include display, edit, macro, function, control, alpha, record level and numeric groups.
- **Playback Controls** The playback controls include a set of positive action GO and STOP/BACK keys, eight playback faders logically grouped in pairs, eight playback manual override keys and a rate wheel with associated TAKE CONTROL key.
- **Submaster Controls** The system supports 24 or 48 linear fader submasters. Each submaster is provided with a key that is user programmable to perform a variety of functions.
- **Disc Drives** The main console has a maximum of two 3.5" disc drives, one linked to the main

electronics, the other to reserve electronics.

- **Colour Monitors** Each console drives two detached high resolution colour monitors.
- **Electronics Tower** The floor or rack mounted unit contains the following:
 - Central processing unit
 - Memory card
 - Serial input/output card
 - Dimmer processor cards (maximum seven)
 - Serial transfer module
 - Dimmer transfer module (maximum four)
 - Central battery backup reserve system
 - Duplication of each of the above for full tracking backup.

Operating Functions Setup

- **Main setup Menu** Allows access to sub-menus. In this display the title of a show may be entered via the alpha numerical keypad.
- **System Parameters Sub-Menu** Allows definition of the number of dimmers and channels in the system. Changing these parameters does not erase memory.
- **Console Definition Menu** Allows the operator to identify the use of the serial transfer module ports (console and hand-held controls) and assign them levels of system access. Any peripheral equipment may be fully locked out, record functions locked out or playback locked out. Any device may be given display access only, or fully enabled within the definition of a particular port. The Main Console is permanently defined as port number 1 and is the only port allowed to assign access to other ports.
- **Dimmer Output Configuration Menu** Allows assignment of the either DMX512 or AMX192 protocols, or a combination of both protocols operating simultaneously, with selected dimmer ranges specified if desired. Percentages of available memory remaining in the system is displayed in this menu.
- **Submaster Menu** Provides the means to define an individual submaster as pile-on or inhibitive, normal

or over-ranging. In this menu, the button associated with each submaster may be programmed to act as flash on, flash out or be inactive. The button may also be assigned to act as an alternate action device to force the associated submaster into independent mode.

- **Defaults Menu** Defines operator selectable system parameters including track vs. cue-only, set level value, default profile and default fade timer.
- **Disc and Reserve Menu** Permits access to disc commands including selective loading of cue, patch and profile information. Individual items or ranges may be loaded into an active system without overwriting existing data.
- **Clear Functions Menu** Provides access to functions permitting individual cues, patch or the entire system may be cleared.
- **Printer Requests Menu** Accesses printer commands for cue sheet, cues, groups, effects, submasters, patch, profile and note information. The system remains operative for any other commands during a print operation.
- **Channel Format** When activated, the function permits display of only active channels used in the cue list.

Operating Functions Patching

- Each dimmer may be assigned an alphanumeric name of up to five characters and is addressable by this alphanumeric name.
- Patch information may be displayed by dimmer number, channel number or name. The display of each may be suppressed if desired.
- Any dimmer may be assigned a profile number to adjust both the end level (proportional patch) and the dimmer output curves. Profiles may be used to instruct a dimmer to act as an artificial non-dim or according to a custom curve created by the user.
- Up to sixty-four profiles may be created and used wither as dimmer output curves or fade profiles. Endpoints (0 and 100%) may be specified as well as

up to 19 intervening points (5% to 95%). The system may be instructed to calculate intermediate levels between any two points or reset any curve to linear on command. A PROFILES display screen is available to create and preview these output and fade curves.

- **Direct Dimmer Access** permits individual dimmers to be temporarily isolated from their channels assignment and brought to a specified level for focusing or adjustment. Any dimmers isolated in such a manner may be previewed in the UNPATCHED DIMMER display. Dimmer levels controlled in this manner are not included in record commands.

Operating Functions Level Setting and Recording

- Channel lists, recorded groups, submasters contents and cue contents may be used to construct a command line for setting channels at specified levels or controlled proportionally. All levels are collected on a "Highest-Takes-Precedence" manner. List combinations may be constructed using AND THRU and MINUS keys, and terminated using the * key.
- Command line channel lists may be edited using cursor keys and entries may be modified, deleted or inserted.

All channel levels addressed via the command line may be controlled proportionally via a level wheel. The wheel is a velocity sensitive device such that the more rapidly it is moved by the operator, the greater the incremental change in level, conversely, the slower it is moved, the more sensitive the wheel and therefore the more subtle the change.

Continues overleaf

Specifications continued

Operating Functions

Level Setting and Recording continued

- Direct action keys are provided to being selected channels to levels without the need for the @ or * push. Channels may be set to full, or any desired default level through use of the SET key, or may taken to 0% with the OUT key. Additionally, selected levels may be raised or lowered a point through use of dedicated direct action + 10% and -10% keys.
- Selected channels may be held at current levels or set to a specified level while all other channels are driven to 0 using REMAINDER DIM.
- RETURN may be used to restore channels to levels prior to the last command entered.
- A selected channel or dimmer may be flashed between 15% and full for rapid identification or checking.
- To reduce conflict between multiple control desks, a TAKE CONTROL key permits a desk to rob control of a channel from another desk or hand-held controller.
- A maximum of 999 groups may be recorded for fast recall of commonly used stage looks. groups may be recorded directly from the live output or created blind. Each group may be assigned an alphanumeric name which will appear in the PLAYBACK SUBS display when a named group is loaded onto a submaster.
- Cues ay be recorded in any order and up to 9 cues may be inserted between any two in numeric sequence. Cues may have up to eight parts, each will separate starting points, fade times and end points. In addition to lighting fads, the initiation of a cue may begin an effect, a macro and an automated fixture console cue.
- Each cue may be recorded with the following information :
 - Fade time up to 999 seconds, with split up/down times
 - Delay time up to 999 seconds, with split up/down times
 - Manual fade times
 - Defaults fade times
 - Special effects assignment
 - Profile assignment
 - Auto-follow of next cue with wait of up to 999 seconds
 - Macro command activation
- The system may be selected to operate in TRACK mode, whereby channel modification track into following cues; or in cue-only mode, whereby the desk acts as a crossfade system. This selection may be made in the SETUP display, or chosen on a cue by cue basis. Additionally, a BLOCK CUE command is provided to prevent tracking of channel modifications past the specified point.
- A channel may be selected for viewing and modification in the CHANNEL PATH display. The selected channel's level is shown for each cue in which it has been recorded. Modifications are recorded directly in this display; no record command is required.
- A CUE SHEET display is provided to permit manipulation and editing of cue data. Active, next and previous cue are indicated by colour coding.
- The CHANNELS IN USE display provided the total number of cues in which each channel has been used.
- A CONTROL display provides immediate reference for the origin of each channel's level, whether cue, submaster or wheel. If the level is being contributed by a submaster, the number of submaster will be indicated.
- Eight function keys are provided which change their operation with change of display and operating mode. This techniques serves to reduce the total number of surface controls and therefore operational confusion.
- Any cue may be used as the basis for another cue through use of the COPY TO CUE and COPY FROM CUE commands found on the function keys in the PREVIEW display.
- The live output may be recorded without the contribution of active submasters using the RECORD WITHOUT SUBS command in the LIVE display.
- The movement of a selected channel may be previewed through a series of cues through use of the SEARCH command in the LIVE display.
- The contents of a submaster may be re-recorded into the assignment group or simply recollected by the submaster after adjustment by the level wheel through use of the UPDATE SUB + GROUP and UPDATE SUB commands in the SUBMASTER display.
- An on-line NOTEPAD display is available at all times for the recording of messages and reminders via the alphanumeric keypad. The notepad will be held in system memory and the notes may be printed out.

Operating Functions Playback

- A single GO push is capable of starting an entire cue, composed of up to eight parts. Manual override of a recorded time is available on an associated linear fader. Proportional rate control of an active cue or cue part is available via the rate wheel.
- System architecture permits a maximum of 128 simultaneous fades, including fades on manual playbacks which are available for manual override, "phantom" or active but inaccessible fades, and fades within effects.
- A cue or cue part of a fader may be stopped, reversed or converted to manual at any time while the fades is active.
- A group, effect, or series of channels may be assigned to a submaster for propotional level control and playback. Multiple submasters may be loaded using a command string or by use of a pre-programmed macro key. Output levels may be transferred to control of a submaster directly using a RECORD SUB command.
- A load command to an active submaster will not occur until the submaster fader is brought to 0.
- Group, effect, or channel information loaded to submasters, as well as submaster levels are available for preview on the PLAYBACK SUBS display.
- Eight user programmable macro keys are available to permit single key execution of command strings. Each macro may contain up to 32 keystrokes. Macros may be executed by a cue number.

Specifications continued

Operating Functions

Special Effects

- A total of 999 special effects may be recorded. Any effect may be activated or ended by a cue, or may be loaded to a submaster for manual control of levels.
- Each effect may contain up to 99 steps. Each step may be comprised of cue memories, groups, or individual channels at levels.
- Fade in, dwell and fade out times may be recorded for each step. Each step may contain overall high and low levels applied proportionally to all levels within the step.
- Function keys are provided to permit default times and attributes to be applied to all steps in an effect.
- Command lines used in programming effects steps may be edited using <, > and HOME keys. Entries may be modified, deleted or inserted.
- An effect may be assigned any combination of attributes which control its direction, including positive, negative, reverse, bounce, build and random.
- An effect may be assigned an alphanumeric title which aids identification when previewing or when the effect is loaded to a submaster.
- A test function is provided to instantly stop and start an effect for creation and preview purposes.

Operating Functions

Backup and Diagnostics

- Each system may include a set of dual electronics including power supply and disk drive as backup to the main system. Two facilities are supplied:
 - A** Duplicate electronics in the consoles.
 - B** Duplicate electronics in the Tower that are activated automatically if a failure is detected in the main system. Alternatively, the Tower backup may be activated manually via a keyswitch and the automatic change-over disabled if desired.
- A macro key may be programmed to substitute for any key on the console surface in the event that a key is damaged or becomes inoperative. The code for this function may be entered at any time, even after the key has ceased to function.
- Memory diagnostics sequentially write and read all locations in memory with various test patterns and report any failures to the operator.
- Disc diagnostics write and read all locations on disk with test data and report any failures to the operator.
- Video diagnostic test all dot positions for visibility, viability of the character locations and legibility.

Peripheral Equipment

Optional equipment may be added to an existing system at any time. All wiring and software provision for optional equipment is furnished with a standard system.

- **Hard Copy Printer** Permits a printed record of cue, group, effect, patch, submaster and notepad programmed information. Printing is a background task and the system will operate normally while printing occurs.
- **Designers Remote Control** Up to two control surfaces may be connected to the Electronics Tower in addition to the main console. These desks may be located remotely and used as Stalls or Studio Controls. Each desk duplicates the controls of the main console including keypads and playback facilities, command line display controls and wheel.
- **Hand-Held Remote Control** A maximum of three hand-held remote controls may be connected to the Electronics Tower. Each control contains a

14 character LCD for command line and level control. The hand-held control may be used to facilitate luminaire focus without affecting other activities.

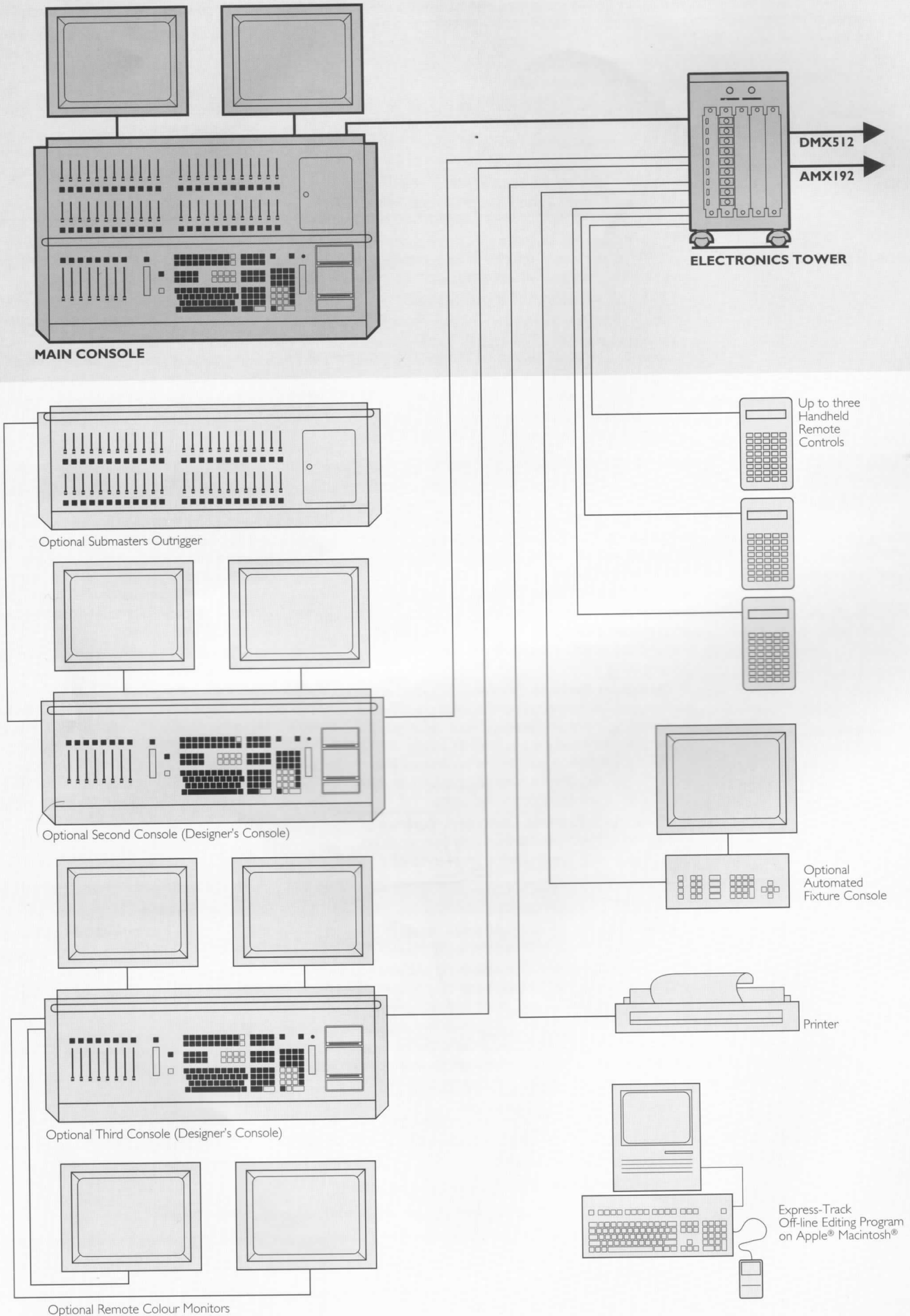
Alternatively, the control may be used to execute cues, effects and macro commands. The Main Control provides lock-out facilities to prevent interference by hand-held controls when desired.

- **Express-Track** Off line editing programme for use on Apple® Macintosh® computers. Screens include CHANNEL VIEW, CUE LIST, INFO VIEW, TRACK LIST, OVERVIEW and JOURNAL. Channels may be viewed as STAGE, PREVIEW, GROUP and SUBMASTER. The programme offers full patching and system setup facilities. The Light Palette display is enhanced to show direction of moves, hidden commands, parts, unused channels and more, using a friendly mouse driven style of operation.

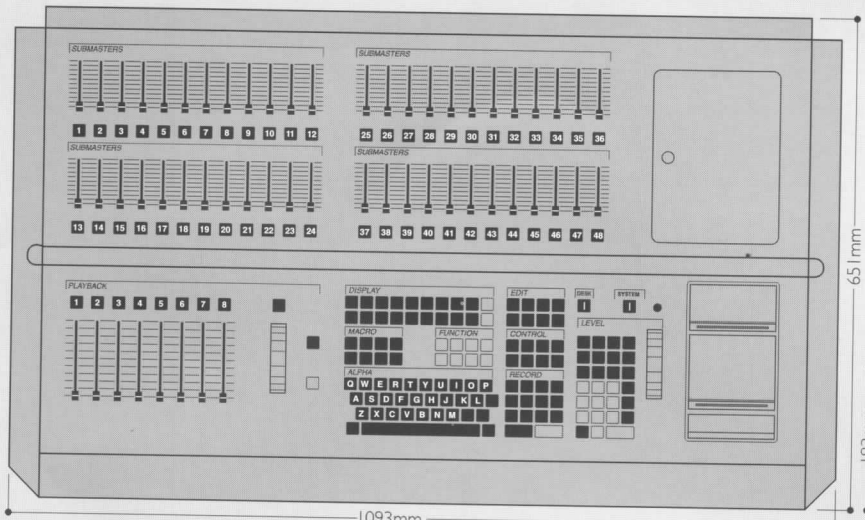
Technical Specifications

Electronics Tower	Serial Communication	<ul style="list-style-type: none"> ● To consoles: Up to three consoles may be connected simultaneously; RS422 compatible ● To Handheld Remote Controllers: Up to three Handheld Remote Controllers may be connected simultaneously; RS422 compatible ● Printer; RS232 ● Remote Device Control: RS485 compatible
	Dimmer Data Output	<ul style="list-style-type: none"> ● DMX512: Up to seven outputs of 512 dimmers each, depending on tower configuration ● AMX192: Up to eight groups of three connectors for 576 connectors per group, depending on tower configuration
	Mains Supply	● 220/240 V, 50/60 Hz: One supply for each of Main Processor and Backup Processor (optional)
Main Console	Serial Communication	● To Tower: RS422 compatible
		<ul style="list-style-type: none"> ● Video: Two outputs, RGB TTL levels, EGA compatible ● Remote Video: Max 60 m between console and monitor decoder or line repeaters ● Submaster Outtrigger Console: One single tier 24 or 48 way submaster outtrigger may be connected to a single tier main console
	Mains Supply	● 220/240V, 50/60Hz
Submaster Outtrigger	Serial Communication	● To Main Console: RS422 compatible
	Mains Supply	● 220/240V, 50/60 Hz

System Configuration Diagram



Dimensional Drawings

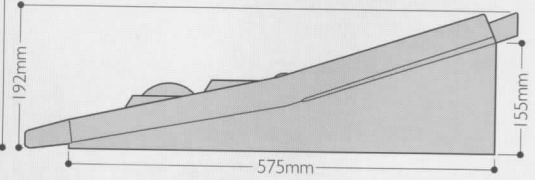


Double Tiered Console

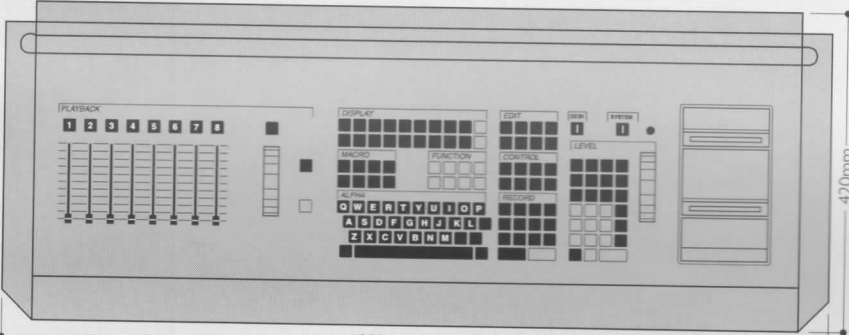
1093mm

651mm

Plan



Side Elevation

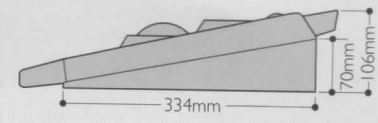


Single Tiered Console

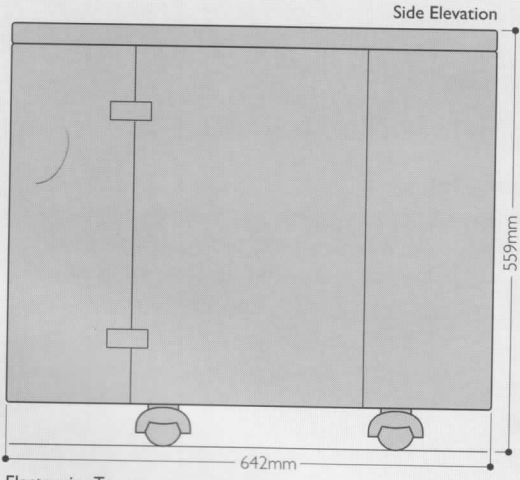
1093mm

420mm

Plan



Side Elevation

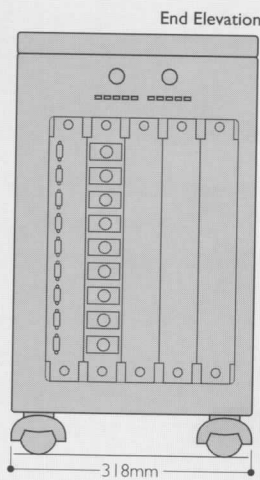


Side Elevation

559mm

642mm

Electronics Tower



End Elevation

318mm

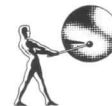
Ordering Information

Product		Item Number
Complete Systems	Single electronics with 24 submasters Includes double tier console, tower and two monitors. Maximum 512 dimmers.	73 094 04
	Single electronics with 48 submasters Includes double tier console, tower and two monitors. Maximum 512 dimmers.	73 094 05
	Full tracking backup with 24 submasters Includes double tier console with dual electronics, tower with dual electronics and two monitors. Maximum 512 dimmers.	73 094 01
	Full tracking backup with 48 submasters Includes double tier console with dual electronics, tower with dual electronics and two monitors. Maximum 512 dimmers.	73 094 02
Designer's Consoles <i>May be used as remote console</i>	Designer's console, single electronics Single tier (not including monitors).	73 094 13
	Designer's console, dual electronics Single tier (not including monitors).	73 094 10
Submaster Outriggers <i>May only be used with Designer's consoles</i>	24 Submaster outrigger, single electronics Single tier.	73 094 18
	48 Submaster outrigger, single electronics Single tier.	73 095 19
	24 Submaster outrigger, dual electronics Single tier.	73 094 15
	48 Submaster outrigger, dual electronics Single tier.	73 094 17
Peripheral Equipment	Printer Including printer cable.	73 088 55
	Handheld remote control kit Including remote unit, 3.5m cable and battery charger	73 081 66
	Colour monitor (one) Two monitors needed per designers console	73 088 50
	Express-Track Apple® Macintosh® off line editing programme, complete with manual.	73 088 60
Accessories	Vinyl cover for double tier console	73 094 31
	Vinyl cover for single tier console	73 094 30

The Light Palette 90 may be configured in many ways to enable total flexibility in system design. To aid ordering, there are four complete standard systems above with possible peripheral equipment.

For particular system requirements, please contact your Strand dealer for system design options for a quotation.

The company reserves the right to make any variation in design or construction to the equipment described. Light Palette 90 is a trade mark of Strand Lighting Limited. Strand and Strand Lighting are registered Trade Marks.



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