A FRESH CONCEPTION IN PROGRAMMED MODULAR LIGHTING CONTROL

MODULAR DESIGN	Gives the ability to expand at will by blocks of channels.
PORTABILITY	The lightweight console can be carried easily to working positions.
TAPE CASSETTE STORAGE	Complete shows can be automatically recorded for future use.
DIRECT MEMORY ACCESS	Leaves the preset facility free for simultaneous blind plotting.
CROSS FADE FACILITY	Cross fade duration and intensity widely variable and supplemented by interrupt flexibility.
PLUS/MINUS FEATURE	A unique facility that enables very fast cue compiling.
CODED CONTROLS	Illuminating controls colour-coded for instant identification.
HIGH RELIABILITY	All solid state electronics: maintenance by simple change of circuit boards.
FAST OPERATION	A cue can be established within one second.

GENERAL DESCRIPTION

A 'Plotlite' automatic theatre lighting controller is an electronically based equipment which enables a lighting programme for a complete show to be built up to the most exacting requirements during rehearsal and stored for automatic production during actual performances, when it is necessary only to press the controls in the correct sequence, according to script, to ensure a trouble-free and artistic lighting programme. The equipment consists of two items; a readily portable control panel and a free-standing console housing the electronic circuitry and the power supply pack. They are cable connected by plug-and-socket connections, and the console is similarly connected to the stage or studio lighting installation.

Almost all the controls are simple illuminating push-button switches. They are colour-coded for ease of identification of their various functions and states, thus virtually eliminating the possibility of operator error and ensuring speed of change of functions.

Intensity of individual lamps and combinations can be preset to provide a working 'datum', but can be varied to individual requirements at any time during rehearsal or, indeed, during a 'live' performance. The level of each channel can be monitored for checking purposes.

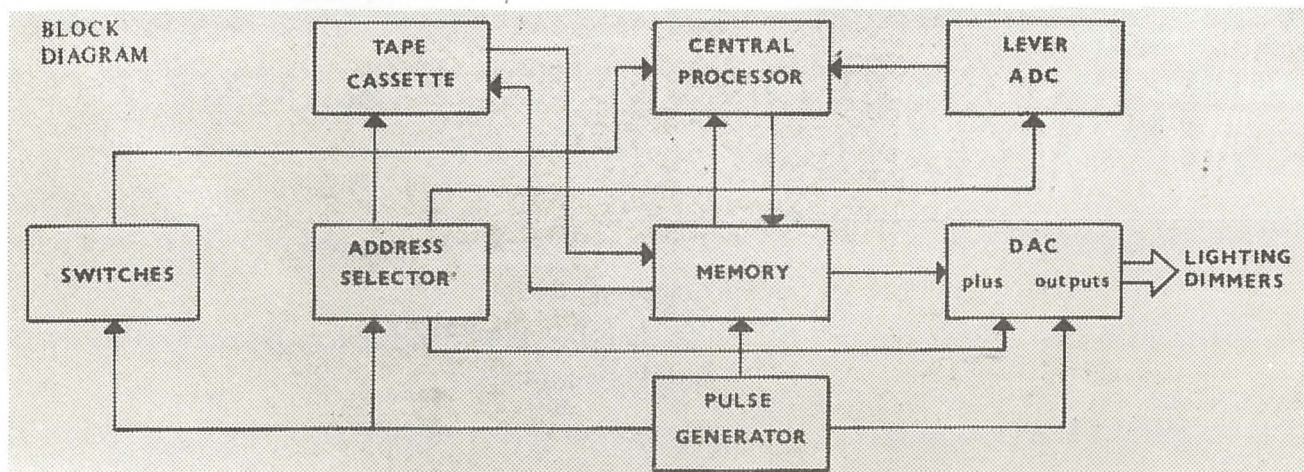The conception is a modular one which enables the expansion of the system by blocks of 32 channels and 32 cues, if necessary, after the initial installation. The equipment contains a memory and a tape cassette control so that cues can be entered and stored by both these means for use during the rehearsal and also the actual show. The memory has a capacity for the instant recall of all stored cues. The magnetic tape can operate simultaneously with any other operation being performed.

A distinctive feature of the device is a preset condition which enables the 'blind' plotting of cues. When the equipment is operated in a mode which gives direct control from memory and/or cassette to stage, the preset condition can be employed, while the show is running, to amend stored cues, for 'blind' plotting or for other purposes.

Another unique feature is a plus-minus facility by means of which it is possible to add to or subtract from cues already used in order to compile cues for use later in the show.

The speed of operation is such that even complex cues can be set into the equipment in less than one second.

During rehearsal, the required programme is stored on tape as each stage is perfected, until the complete show has been memorised. By this means a repertory company, for example, can perform a different show every night with perfect confidence that the lighting of every scene will be exactly as planned during rehearsal with correct lighting intensities, fades and special effects.

BLOCK DIAGRAM

TECHNICAL SPECIFICATIONS AND OPTIONS

Control desk (containing switch functions):
27"(685mm) wide, 11"(280mm) deep, 6"(152mm) high, weight 30 lb (13·7 kg).

Electronic cabinet (free-standing):
22"(559mm) wide, 20"(508mm) deep, 30"(662mm) high, weight 70 lb (31·75 kg).
Protected power supply pack: 50/60 cps, single-phase supply, 200/250V or 100/110V; no special ventilation required.
Temperature 0–70°. Humidity 80%.

Lighting channels:
Available in blocks of 32 up to 256 max. (Higher as an optional extra.)

Cues:
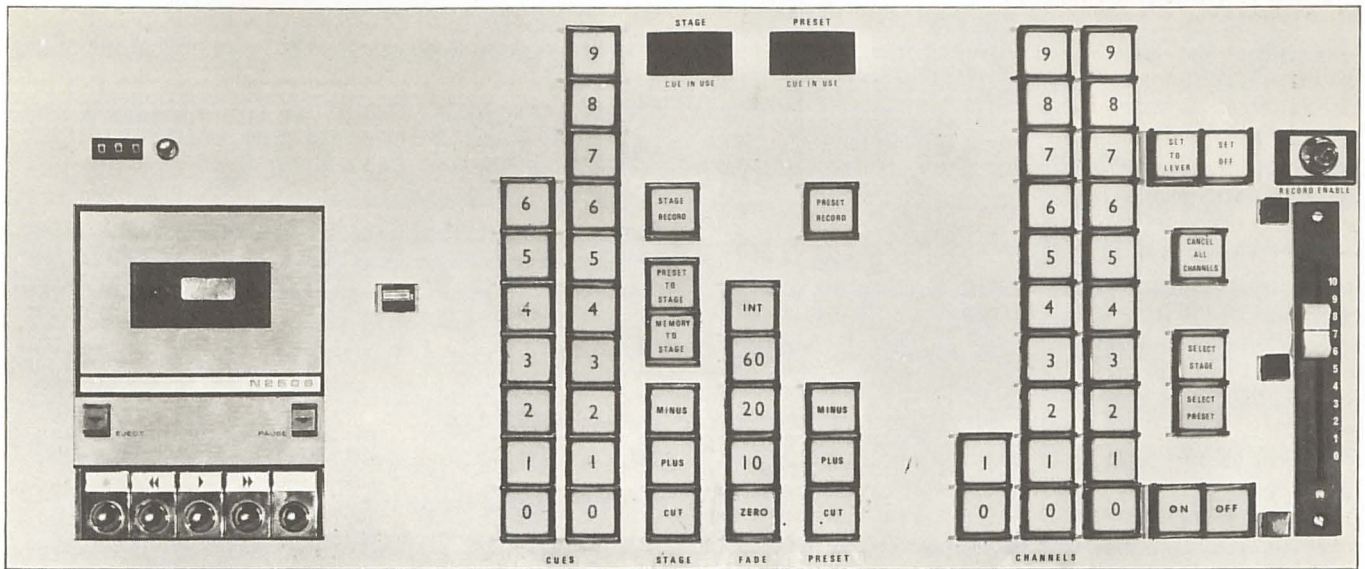Available in blocks of 32 up to 64, extensible in blocks of 64 by cassette tape.

Level control:
Lighting levels from zero to full in 32 discrete steps.

Unique lock-on facility prevents sudden level changes.

Output:
Available via dimmer socket on electronic cabinet; 0 to +5V or 0 to +15V DC for direct connection to dimmer.

OPTIONAL EXTRAS

(1) Lever and associated channel controls can be duplicated without inter-action when operated simultaneously with first lever, so that two operators may share control.

(2) Channels may be extended in blocks of 32 should it be necessary to expand the system.

(3) Cue capacity may be extended in blocks of 64 if required.

(4) Provision can be made for longer fade times to customers' specification.

For ease of operation, the controls have been arranged in two basic groupings representing those required for rehearsal and those for an actual show. All push-buttons illuminate when depressed, the preset functions showing as blue for ease of identification.

FOR USE AT REHEARSAL

Record-enable key. Cues stored in the memory or on tape cannot be overwritten without inserting and turning the key.

Lever. This performs two functions: it permits the level of each lighting channel to be adjusted to the required intensity, and it provides a means of checking the level of a previously selected channel. Associated with the lever are three indicators showing the state of the lever relative to the channel level:

LEVER HIGH: indicates that the lever is set at a higher level than the light to be controlled.

LEVER LOW: indicates that the level is set at a lower level than that of the light to be controlled.

LEVER LOCKED: this lamp, when illuminated, indicates that the lever is set at the same level as the channel light. Only then can the lever take over manual control of the lighting channel. If the lever is moved too rapidly through the correct level (which, if permitted, would cause a sudden change of light level), the lever will not lock on, a condition indicated by the appropriate high/low indicator illuminating.

Set to lever. It is convenient to be able to set all channels to a common lighting level at the start of cue assembly. By moving the lever to the required level and depressing the SET-TO-LEVER button, this facility is made available. The procedure will over-write any previous level present in the selected channel register.

Set off. If the previously stored level is to be retained, depress this button. This function will also cancel SET-TO-LEVER.

Cancel all channels. Depression of this button will switch all channels to zero in a selected cue.

Select stage. When this button is depressed, the selected channel is on stage, but no stage lights will appear until the ON button is depressed.

Select preset. When this button is depressed, the selected channel is in PRESET. This condition enables a 'blind' plot to be undertaken without affecting the lights on the stage. SELECT STAGE and SELECT PRESET are interlocked so that one function or the other is always available.

On/off. Depression of the ON button will cause the light to appear on stage. Alternate pressing of ON and OFF buttons causes the selected lighting channel to flash on and off. Note that this is purely a switching mode which in no way affects the stored level of the channel.

Channels. A required channel is selected by depressing the appropriate buttons. Channel location 000 is not connected to a lighting channel and serves as a 'parking' position.

FOR USE AT SHOW

Cue-in-use indicators. These indicate the cues in use on the stage and in the preset. The indicator automatically updates when a present cue is changed by a crossfade or any other function. An exception is a plus/minus function, when the stage indicator will show 99, signifying that the cue has been modified.

Record. Depression of this button enables an assembled cue to be stored in the memory against the location for further use as a stage or preset function.

Cut. Depression of this button substitutes a new cue for an existing one.

Plus. Depression of this button will add a new cue to an existing cue. If a channel in the cue to be added has zero level, the corresponding channel in the existing cue will remain unchanged. If it has a level, this will be substituted for the existing level.

Minus. Depression of this button will subtract a new cue from an existing cue. If a channel in the subtracting cue is zero level, the corresponding channel in the existing cue will be unchanged. If it has a level, the channel in the existing cue will be taken to zero. The plus or minus function can be applied as a cut or a crossfade of variable duration.

Fade. Crossfades of 0, 10, 20 and 60 seconds are available by depression of the appropriate button. A crossfade can be from preset to stage or direct from memory to stage, as selected by the appropriate button (see Options).

Int. (interrupt). A crossfade is interrupted and held by depression of this button. The crossfade can be terminated by depressing the ZERO CROSSFADE button, or re-initiated by depressing the required CROSSFADE DURATION button.

Cue. The required cue is selected by depressing the appropriate numbered button.

TAPE CONTROLS

Start of rehearsals. Insert cassette and depress ● and ▶ buttons: the tape is now available for recording the first cue. Depression of the STAGE RECORD or PRESET RECORD buttons will enable the contents of each cue to be automatically stored on tape as well as in the dynamic memory.

End of rehearsals. Depress the STOP button followed by the ◀◀ button to return the tape to its start position before removing the cassette for storage and further use during the actual show.

Start of show. Insert the cassette and depress the ▶ button only, in order to transfer the tape's contents to the dynamic memory. It is not necessary to wait until the complete tape has been read before operating the controls.

OPERATIONAL PROCEDURE

INITIAL SET-UP

1.1 Insert and turn the RECORD-ENABLE key to permit writing access to memory and tape.

1.2 Insert the tape cassette and depress the ● and ▶ buttons.

1.3 Depress SELECT STAGE or SELECT PRESET dependent upon whether the stage lights are to be controlled or a 'blind' plot undertaken. The selected mode will remain operative until cancelled by depression of the alternative button.

1.4 Decide if the channels shall be initially set to a common level, or individually set.

1.5 If to a common level, adjust the lever to the level required and depress the SET-TO-LEVER button. This condition will remain until cancelled by depressing the SET-OFF button.

1.6 Select the first channel required by depressing the appropriate channel buttons.

1.7 The light will appear on stage when the ON button is depressed.

1.8 Alternate depression of the ON and OFF buttons will cause the light to flash for identification purposes.

1.9 Select the next channel by depressing the appropriate channel buttons. If the lever has been moved, re-adjust it to obtain the common level. Adjustment will not affect the channel light since this is only active upon further depression of the ON button.

2.1 Depress the ON button to put the second light on stage.

2.2 Assemble the first cue by repeating this procedure to obtain the lighting pattern required.

2.3 Select the required cue by depressing the appropriate cue buttons and depress STAGE RECORD or PRESET RECORD to memorise the first cue and automatically transfer it to tape.

2.4 If the next cue requires only a few light changes, retain the previous cue and modify, using standard procedure. If a completely new lighting pattern is required, depress CANCEL ALL CHANNELS to remove the previous cue. Those already set will remain in memory against the previous cue location.

2.5 Repeat detailed procedure to assemble the second and subsequent cues until the complete show has been built up and memorised for future use.

2.6 Depress STOP followed by the ◀◀ button to return the cassette tape to the start position. The cassette can now be removed for storage and future use.

2.7 Insert a new cassette to enable a completely new show to be memorised. Cassettes have protective tabs which, when removed, prevent over-writing.

Note: The plus/minus feature described below under 'Recall' can also be used to advantage during rehearsals.

RECALL (actual show)

1.1 Turn and remove the record-enable key to inhibit over-writing of the stored cues.

1.2 At the beginning of recall, prior to a show, insert the cassette (previously recorded tape) and depress the ◀ button. It is not necessary to wait until the transfer is complete before operating the controller.

1.3 Cues can be recalled in any order, as a snap action, or as a crossfade of variable duration with the previous cue. In addition, a new cue can be added to or subtracted from the existing one.

CUT (or snap action)

1.1 Depress MEMORY TO STAGE button.

1.2 Select the first cue, e.g. 01, and depress CUT and ZERO FADE buttons. The lights will immediately appear on stage and the cue number 01 in the STAGE-CUE-IN-USE indicator.

1.3 To replace this cue (01) with the next, e.g. 02, depress the cue button 02 with CUT and ZERO FADE buttons. Cue 02 will appear in the indicator.

PRESET TO STAGE (as a crossfade action)

1.1 Assume that a cue is on stage, e.g. cue 21, and it is wished to crossfade to cue 09 in 10 seconds.

1.2 During the scene covered by cue 21, cue 09 will be loaded into the preset by depression of the appropriate cue buttons and the PRESET CUT button. 09 will appear in the PRESET-CUE-IN-USE indicator.

1.3 Depress the PRESET TO STAGE button; this will remain active until removed by depression of the MEMORY-TO-STAGE button.

1.4 Depress the STAGE CUT and 10 FADE buttons to initiate the crossfade. At the completion of the crossfade, cue 09 will appear in the STAGE-CUE-IN-USE indicator in addition to PRESET-CUE-IN-USE.

1.5 To interrupt and hold the crossfade, depress the FADE INTERRUPT button. To complete the crossfade, depress the FADE DURATION button for the new time required, e.g. '5 fade' will give 5 seconds from the restart of the interrupted crossfade.

PLUS/MINUS (as a crossfade action)

1.1 All actions previously described under 'Preset to stage' can be performed direct from memory, leaving the preset available for simultaneous 'blind' plotting during an actual show.

1.2 If it is required to crossfade all lights to dark, select cue position 00 as the final cue and crossfade by the standard procedure.

1.3 At the completion of a show, return the tape to the start position by depressing the ◀◀ button.