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**LIGHTING FOR ENTERTAINMENT**

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## IDM/DL

### INSTANT DIMMER MEMORY LIGHTING CONTROL

#### PART I

#### FUNCTION & OPERATION

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## 1. General

- 1.1 The greater part of the operational area consists of familiar control components which provide conventional single preset, 2-group control for each dimmer channel, but with the additional facility of being able to restrict control to those channels selected to be active. The A and B master faders and adjacent master pushes on the master panel are associated with these conventional, manual facilities.
- 1.2 The prime function of these manual controls is to determine the various lighting intensity levels required for a particular cue by the time-honoured method of trial and error; they can also be used to modify a finalised, recorded cue when this is played-back, during rehearsal or performance, should unforeseen circumstances make this necessary. On some occasions the manual controls may be used to supplement the playback of recorded lighting intensities during performance.
- 1.3 The remainder of the controls, all on the master panel, are associated with the recording and subsequent playback of lighting cues determined at rehearsal. Each cue recorded must be positively identified for future playback, therefore, there is a 3-digit numerical selector associated with the RECORD master push and with the C and D READ master faders. There are two READ master faders, normally used alternatively, one to hold the lighting in use and the other, set to zero, ready to fade-in the next cue. With the 250-odd dimmer intensity presets for every dimmer channel provided by this equipment virtually all lighting changes resolve themselves into cross-fades, either slow or fast, between one cue and the next. The Thyristor dimmers associated with this equipment have an immediate response to the control signal and, therefore, the only difference between a dimming and a switching change is in the speed of operation of the master faders.



1.4 Both the conventional, manual controls and the playback of recorded lighting intensities control the same Thyristor dimmers; the resultant lighting is therefore always dependent on the state of the controls for both sources of control signal. If any dimmer channel is instructed to different intensity levels from two, or more, sources then the highest value will be paramount. When lighting levels are recorded it is always the true effect, the setting of each and every dimmer, that is recorded; even if this is a combination of manual control and two previous lighting effects on the C and D master faders at intermediate positions.

1.5 The time-consuming drudgery of plotting all intensity levels and subsequently, in performance, of resetting of dimmer levers is abolished with this equipment - recording and playback are both virtually instantaneous.

In the two following sections the detailed function of the various controls are explained, also their inter-relation. The Basic Discipline, giving the normal state of controls will be found in section 5.

## 2. Channel Controls

- 2.1 There are two components for each dimmer channel, a dimmer lever and a three-position switch. The translucent scale moulding of the dimmer lever can be internally illuminated in red and/or white and when the top half of the scale is pressed it operates an internal, momentary-contact switch. Red display indicates that the channel is active through the manual A or B master faders; a white display indicates that the channel is active through the playback of recorded intensity levels through the C or D master faders. If there is no display then the dimmer channel is not currently in use.
- 2.2 The three-position switch is concerned solely with grouping the dimmer lever to the A master fader when it is in the top position, or to the B master fader when in the bottom position, or to both A and B master faders simultaneously if it is in the central position; this latter facility allows the channel to be common to both the A and B groups and, therefore, it can be kept static when cross-fading these two master faders.
- 2.3 The knob of the dimmer lever provides direct control, through the A or B master faders, but only when the scale displays red. All channels can be selected to the red state by pressing the red ALL master push mounted immediately above the A and B master faders; the white ALL push, below them, will cancel this selection and red display. To limit the red, and therefore active, state to selected channels press the red push (Individual Red On), one of the three mounted adjacent to the Dial, and at the same time press the scale of those dimmer levers required. Once selected in this manner the selection will be routed and displayed until deliberately changed, or the equipment switched off. The selection can be cancelled individually by pressing the dimmer lever



scale in conjunction with the white push (Individual Red Off) adjacent to the Dial.

2.4 When either or both of the C or D master faders are above zero the dimmer lever scales will display white but only if that channel is instructed by the playback to be above zero intensity. This white display can be limited to display those channels activated by the C master fader or by the D master fader by moving the white switch, mounted horizontally between those two faders, towards one or the other. The white display, and playback control, can be cancelled individually by pressing simultaneously the dimmer lever scale and the black push (Individual White Off) adjacent to the Dial; this has the immediate effect of switching off the channel.

2.5 When the dimmer levers have a white display the dimmer lever knobs do not indicate the intensity levels of the played-back cue; if necessary this value can be ascertained by pressing the scale which will then cause the intensity level to be shown on the Dial. This facility is valuable when it is necessary to modify a played-back cue:- the level is read, the lever moved to match the reading, it is checked that the lever is fed from the A or B master fader, and then control is transferred to manual by pressing the dimmer lever scale simultaneously with the red push adjacent to the Dial (subsequent action that may be desirable is described later). It is for this reason that a red selection and display always cancels any white display and feed from the playback.

### 3. Manual Master Controls

3.1 The A and B master faders for the A and B groups of dimmer levers have already been described above. The common red scale to these two master faders provides a visual reminder that red selection and display is necessary at the channel dimmer levers if they are to be active.

3.2 On theatre models there is a F.O.H. (Front of House) fader mounted adjacent to the A and B master faders. This is normally kept a full on the scale as it inhibits the response of channels (specified at time of manufacture) controlling lighting loads in front of the proscenium. The purpose is to avoid complicating a simple fade-out or fade-in merely because of the need to accelerate or retard the dimming of these channels to avoid ugly patches on the house tabs. The F.O.H. inhibitor always affects the chosen channels if it is not at full no matter whether they are manually controlled or activated from the playback.

3.3 The D.B.O. (Dead Blackout) switch always has similar over-riding control. This switch, with a black knob, is mounted vertically between the C and D master faders. It should normally be central; Dead blackout is effected by putting it down, when it has a locking action, or up when it is against a spring return. When returned to the centre position the same lighting as before will be restored unless the master faders, etc., have been changed under cover of the blackout.



#### 4. Memory Master Controls

- 4.1 When the RECORD push is pressed the intensity settings of all dimmers will be recorded virtually instantly; all this information will be stored and identified for future reference by the 3-digit number displayed adjacent to the RECORD push. To change the identification number push-up the sprung-centre switch mounted vertically immediately below the unit column; this will cause the 3-digit number to notch up by one every time it is pressed-up. If pressed down the switch will cause all digits to reset to zero. The other, adjacent, sprung-centre switch, mounted horizontally, will notch up the ten column by one when pressed to the right, or the hundred column if pressed to the left. The identification number required must be determined before the RECORD push is pressed; the push will be internally illuminated in yellow as a reminder that an unrecorded state exists. The indication will be extinguished when the recording process is finished but when the identification number is changed it will light again.
- 4.2 A series of lighting states will normally be recorded in sequence; if the REC. SEQ. (Record Sequence) switch, mounted above the RECORD push, is moved to the top position the identification number will automatically advance by one each time the RECORD push is pressed.
- 4.3 To read the intensity levels previously recorded the required identification number is selected, as described for the RECORD push, but on the 3-digit numerical selector mounted above the READ C push. Before pressing the READ C push check that the C master fader is at zero; then when the READ C push is pressed the previously recorded lighting state will be read ready to be faded-in by the C master fader. The READ C push will light up white internally when pressed to indicate that it is that cue number.



displayed above that is controlled by the C master fader. As previously described the dimmer levers of all channels above zero will also have a white display to indicate that they are activated through the playback. If the identification number above the READ push is changed it will have no immediate effect other than causing the white indication in the READ C push to be extinguished. It is pressing the push which initiates the change.

4.4 As the majority of lighting changes are dimming changes the next lighting state would be played-back on the D master fader by the READ D push in conjunction with its numerical selector. On cue the D master fader would be faded-in and the C master faded-out. Subsequently the C master fader could be prepared for the next change. Because of this alternate use of the C and D playback facilities, normally in a sequence of lighting changes, it is necessary to advance each numerical selector by two digits rather than just one; therefore, the switch under the unit column will need to be pressed up twice.

4.5 The lighting state played-back on either the C or the D master faders can be switched off by pressing the appropriate WIPE push, mounted below these faders. The WIPE push can also be used to cancel the playback when the master fader has been faded to zero; this is not an essential routine as the next time the READ push is pressed it will automatically substitute the read lighting levels. Individual channels, activated by the playback, can be switched off by pressing simultaneously the dimmer lever scale and the black push (Individual White Off) adjacent to the Dial. Neither of these actions affect the recorded lighting state in anyway, they can always be read exactly as before.

4.6 If it is necessary to modify the intensity levels of certain channels activated by the playback (as previously described, para. 2.5) the yellow pilot light mounted between the two READ pushes will light to indicate an unrecorded state. If the modification is to be a permanent change to that cue, with the same identification number as is displayed above the illuminated READ push, then this can be done simply by pressing the RE-RECORD push mounted above.

4.7 During rehearsals it may be necessary to playback a past cue; this would involve resetting a READ numerical selector to zero and then to the required identification number. To avoid the necessity for this there are simple, manual selector switches and associated READ C and READ D pushes under the hinged flap at the top of the master panel. All three digits must be manually set and then the adjacent READ push is used in conjunction with the appropriate master fader. These facilities may also be useful if it is necessary to insert an extra cue, out of numerical sequence. The provision of these duplicate facilities does not mean that cues cannot be recorded out of sequence or cannot be played-back out of sequence - there is no limitation whatsoever in this respect; however a non-logical sequence can be far from convenient during operation of a series of quick lighting changes. During rehearsals the ability to go back to a previous cue is essential.

4.8 The CROSSFADE rotary knob can be used instead of the C and D master faders. This is not operational if the yellow three-position switch mounted above it is central. Before changing the position of this switch the position of the knob must be matched to the position of the C and D master faders, one of which should be at full and the other at zero; similar precautions are necessary, if an unwanted switch change is to be avoided, when the CROSSFADE is switched out



of control. If the switch is put down, to C/F, then the numerical selection, READ C and READ D pushes must be used as previously described. If the switch is put to the top position, to C/F SEQ. (Crossfade Sequence) then the **playback** selection and activation will automatically be advanced in sequence as the CROSSFADE knob reaches the extremity of travel.

- 4.9 The CROSSFADE knob is motorised on recent models. The horizontally-mounted MOTOR switch, below the knob, provides off in the centre and direction each side of centre; the speed in either direction is determined by the small black rotary knob mounted above the C/F switch. The motor drive to the CROSSFADE knob is through a slipping clutch so that manual acceleration or retardation is always available.

## 5. Basic Discipline

5.1 Switch on the equipment, both the power supplies to the control equipment (normally an isolator switch associated with the Power Unit) and the power supplies to the Thyristor dimmer racks. At the desk press the white ALL push and the two WIPE pushes to cancel any random indications that may be present; check that the A, B, C and D master faders are all set to zero but that the F.O.H. inhibitor (if fitted) is at full; check that all switches on the master panel are central. Lift the hinged flap on the master panel, check the L.M.T. switch is central at the M position, insert the key and turn clockwise. Set the RECORD, READ C and READ D numerical selectors to zero or to the commencement of the numerical series for the rehearsal or performance. While the magnetic drum is running up to speed set all channel dimmer levers to zero and all channel three-position switches to the top A position. Then raise the A master fader to full. When the HEADS IN indicator is alight the equipment is set ready to the normal state for the commencement of a rehearsal or performance.

5.2 If you leave the desk for a short time first remove the key so that nobody else can interfere with the lighting states already recorded, also put down the D.B.O. switch. Don't forget to replace the key when you return!

5.3 When finished with the equipment it is important that you should put the A, B, C and D master faders to zero and press the white ALL and the two WIPE pushes before you switch off.



## 6. Basic Operation

- 6.1 The following method of operation are suggestions only - over a period of time an operator with day to day experience of the equipment and the working methods of his colleagues on the production team will develop his own technique.
- 6.2 The starting point is assumed to be the desk set to the normal state as detailed in the previous section, i.e. all levers at zero, all channel switches to A, F.O.H. and A master faders to full and all switches on the master panel central.
- 6.3 To raise and lower channels individually press the red ALL push so that all channels are selected for manual operation. Use the dimmer levers in the normal manner; their response is immediate so they can be used as switches if operated fast, or dimmers if operated slowly.
- 6.4 To reduce all channels alight proportionally  
The dimmer levers are subject to the A master fader so reduce this as required.
- 6.5 To form two groups under separate master control  
Change the channel three-position switch to the B position for one group; this will then be subject to the B master fader and the remainder still subject to the A master fader. This could be advantageous when determining intensity levels for subsequent recording if, for example, there was to be a slow change spread over several cues affecting the background and meanwhile there were other changes, not proportional, affecting the acting area.
- 6.6 To crossfade the two groups with some channels remaining unchanged  
Change the channel three-position switch to the centre A and B position for the channels to remain unchanged. Raise the incoming fader to full before

taking out the outgoing fader.

6.7 To switch channels on to a precise intermediate intensity (a technique suited to television studios).

If not starting from normal state first press the white ALL push to clear the red selection described above, if necessary reset three-position switches to A with A master fader at full, then set all dimmer lever knobs to position 7. To switch on press simultaneously the dimmer lever scale and the red push adjacent to the meter; to switch off press simultaneously the dimmer level scale and the white push adjacent to the meter.

6.8 To record a cue set the numerical selector adjacent to the RECORD push to the first number to be used for the production. When the lighting required is finalised press the RECORD push; as soon as the internal yellow indication is extinguished the intensity levels of all dimmers at that moment have been recorded. The lighting in use still remains controlled by the dimmer levers, therefore they can be modified for the next lighting state. Change the RECORD number ready for the next cue to be recorded. (See also paragraph 4.2).

6.9 To set and record a series of cues involving a progressive fade of one group while other channels change to individual levels

Form two groups and operate manually as described in paragraph 6.5. Each time the required effect is achieved allocate a cue number and press RECORD.

The recording process stores the exact state of intensity settings of the dimmers, no matter how these have been determined.

6.10 To playback a cue

Select the required cue number on the numerical selector over the READ C push, check that the C master fader is at zero, then press the READ C push. This will then immediately light up to show



that the cue number displayed above is ready to be faded-in by the C master fader. Press the white ALL push, to cancel the lighting at present held by the dimmer levers, and raise the C master to full at the speed required. Immediately the fader leaves zero there will be a white display in all dimmer lever scales but only for the channels which were recorded above zero intensity.

6.11 To change to another cue

Select the required cue number on the numerical selector over the READ D push, check that the D master fader is at zero, then press READ D. Raise the D master fader to full and then fade the C master fader to zero. If it is desired to clear the old cue from the C master fader press the WIPE push immediately below that fader; this is not essential since when a new cue is read onto the C master fader it will entirely replace the previous cue. The proviso that the incoming master fader should be brought to full before the outgoing one is taken to zero only applies if there are channels with the same intensity levels common to both cues. (See also paragraphs 4.8 and 6.20).

6.12 To modify a channel when it is controlled by the C or D master faders

It will be required from time to time, especially of course during rehearsal, to modify channels "up a little" or "down a little" or even take them right out, although they are now fed from playback and not from the dimmer levers. First the dimmer level in the playback should be discovered by pressing the channel dimmer scale and reading its position on the specially calibrated indicator dial. The lever is approximated to this position and the individual red push adjacent to the Dial pressed; the scale light changes from white to red, indicating that the channel is under control from the lever knob. It is only necessary to approximate the level, because the purpose of the operation is to alter it anyway, and

an exact record of it still exists until re-recorded. It is, however, important to ensure that either the A or B fader is at full to ensure a supply to the individual channel lever. In practice, therefore, during rehearsal with playback one of these is kept at full. This channel, and others if required, can be modified to give a new effect. The pilot light between the two READ pushes will have lit to warn of an unrecorded state. The new effect can then be recorded under a new number by using the RECORD push, or under the old number by using a RE-RECORD push.

Although the new lighting has been recorded for recall as one effect, it is still held by a combination of playback and dimmer levers which shows as a mixture of some levers displaying white and some red. The cue should be re-read, so that the dimmers already displaying red will also show white and the reds can be cancelled by the white ALL push, if desired, and control returned completely to playback. However, it may be that the same modification has to appear in several cues, in which case the partial transfer can be retained at the desk and re-recorded into all such cues until no longer required.

6.13 To switch off (discard) a channel when it is controlled by the C or D master faders

Press the dimmer lever scale and the black push adjacent to the Dial. The modified lighting can be recorded, or re-recorded, as described above.

6.14 To add a channel to lighting controlled by the C or D master faders

Select the channel individually by pressing the dimmer lever scale and the red push adjacent to the Dial. Providing the A master fader is at full the dimmer lever knob will be active. The modified lighting can be recorded, or re-recorded.



6.15 To pile (add) two cues

Select the two cues required and read, but use both C and D faders in any relationship required. Under these circumstances, the white lamp display in the dimmer lever scales comes from two piled sources. Should it be necessary to know what each is doing the display of one can be extinguished for the time being by pushing the white switch knob between the two faders towards the other. This will only affect the white display, not the lighting under control at the time.

6.16 To amalgamate the contents of two cues and record as a third

Proceed as above, and when the C and D faders are in the relationship required (both at full, or one at full and the other at a quarter, for example), allocate a new number and Record. The faders can be at any position; what is in fact recorded is the state of the dimmers at the time. This routine provides a means of recording a proportional cut on one fader or any mixture of the two.

6.17 To make up and record lighting effects by combining groups of light, rather than individual channels

Record each group separately, preferably giving them a series of numbers at the high end of the memory store. In this way there will be no interference when the time comes to record the show cues in the normal way. The procedure follows that in paragraph 6.16 above. A pair of groups is combined and recorded as a third; then another group is read and combined with the result and so on. Due to the Instant Memory action this process is in fact much faster than would appear at first sight. In this way any number of groups in any proportion can be added together and recorded as a cue to be brought in under one number using one master. At any time individual channels can be modified or trimmed using the transfer to the dimmer levers in the usual way. The individual groups should be kept in being on their memories as this could be useful, as in 6.18 below.

6.18 To remove or modify a group in a lighting effect made up of several groups which were then recorded as one cue

The lighting effect will be on one playback and the group in question should be called up on the other playback. The indicator switch between the C and D faders is pushed over towards this latter, thereby extinguishing the indication of all except that group.

If a switch change is acceptable press the black push adjacent to the Dial and also those dimmer lever scales displaying white. If a dimming change is necessary, proceed to modify the channels displaying white as described in paragraph 6.12. In either case the modified effect can be recorded, or re-recorded. Remember to return the white display switch back to the normal central position.

6.19 To preview the content of an incoming playback before it takes effect as lighting

Raise Master Fader from zero sufficiently to allow its micro switch to operate (at about the first half division). Use the white display switch restrict the indication to the playback in question.

6.20 To Crossfade two cues

Under these circumstances, one of the C and D faders will be at full and the other at zero. The crossfader knob should be placed to bring either C or D under the arrow to match the fader which is at full. The crossfade switch can then be put down and an integrated crossfade can then take place in which channels at levels common to both playbacks will remain steady without the overlap needed when this is done as previously described on the C and D faders. It is important to set the C and D faders with the correct one at full, as shown under the arrow, and the other at zero before switching the crossfader out of circuit. See also paragraphs 4.8 and 4.9 for additional facilities associated with the crossfader.



6.21 Follow-on cues

Follow-on cues which may arise just because of the necessity of avoiding ugly patches on the house tabs can be simplified by using the F.O.H. inhibitor master fader to retard or accelerate the fading of those control channels (a permanent group) feeding equipment in front of the curtain. The F.O.H. inhibitor can never initiate lighting only restrain lighting controlled by any other master faders.

6.22 Follow-on cues affecting several groups

This type of cue, which is sometimes described as processional, would on orthodox controls be grouped up on several submasters. Then, first this group, then that makes its entry and proceeds at different speeds, as far as the dexterity of the operator allows, ultimately to arrive at some grand concluding effect. Bearing in mind that there are four masters, A and B, C and D, on system IDM/DL, it is easy to read down two of the more complex groups on C and D, and set two of the lesser groups by hand on the dimmer levers for A and B without much trouble. Progress is then as usual, with some manual play on the individual levers thrown in, if required.

That is one method; another, more logical and far more precise, is to split the processional cue into separate pictures at each entry. This method could not be adopted on orthodox controls because of the limited number of presets, but with 250 instant presets, instead of just 3 (or at the most 10) manual ones, the operator can afford to use half a dozen or so for a follow-on cue. Procedure is to record exactly the state of light just before the first entry, second entry, third entry, and so on. The relative levels so recorded will automatically determine which channels creep, which channels have to overtake, and which channels cease to move at all. Once recorded, all the operator has to do is to read down the cue numbers and concentrate on the timing of his crossfader between each cue.

6.23 Slow changes with switch cues intervening

The commonest examples are sunsets or dawns, in which, as the general light slowly increases or reduces, various practical fittings are switched in or out together with the spots representing their lighting. There may be several such cues. Using system IDM/DL they can be precisely and simply performed by a variant of the second method outlined in paragraph 6.22 above. In this case, instead of each picture representing an entry in a progressive dimmer change, there are particular moments when the identical lighting is recorded as a second cue but with the channels representing the lighting from the fitting added. Thus a gradual fade takes place on the crossfader and is completed just before the switch cue itself is read on the fader next due to come in. Whichever it is, either C or D, it is put to full, but has no effect. However, at the moment of the switch cue, the crossfader is cut out, thereby giving an immediate switch over to the cue with the added lights.

Alternatively the A and B masters can be used for the fittings lights, the desk levers being set by hand accordingly. The sunset continues slowly crossfading from memory to memory, but certain channels are transferred to the desk levers and grouped to A and B, which are simply banged in or out when their turn comes. It might not even be necessary to plot these manually set levels, since they could be recorded as one cue number and read on a playback during the interval which preceded the scene. Dial readings are then taken of the individual channels displaying white and the dimmer levers set to correspond ready for their entry later on.



6.24 Go back to cue 'X' - a common rehearsal requirement.

Select the number, press the READ push and raise the fader to full. See also paragraph 4.7.

6.25 Dead Blackout

Put down the black three-position switch mounted between the C and D master faders. The same lighting will be restored when it is returned to its normal central position unless the master controls are changed under cover of the blackout.

## 7. Operational Hints

7.1 Do not jab at master pushes, press them deliberately and firmly.

7.2 The prudent operator will avoid using the C/F SEQ. (Crossfade Sequence) facility during early rehearsals since this is convenient only for a strict sequence of cues.

7.3 Never attempt to fire any flash box or similar pyrotechnic device, from the desk, or indeed from any circuit including a dimmer.

7.4 Remember to put the A, B, C and D master faders to zero, and press the white ALL push and the two WIPE pushes before switching off the equipment.

