LSC
LIGHTING SYSTEMS

MINIM

Lighting Control Desk
Operator Manual

Version 1.03   May 2015

Designed and
Manufactured
in Australia

MINIM QUICK REFERENCE

To view the type of object recorded in each memory tap **[PAGE]** to select the required page then, press and hold **[PAGE]**. The playback flash/assign buttons containing Scenes will light, Playbacks containing Chases flash quickly and empty Playbacks are not lit. When you press any **[record]** button or change **[MEMORY]** to "preview" or "edit" modes, all Playback flash/assign buttons flash twice, then show their contents as above. If you change pages whilst in "edit", "preview" or "record" modes, the contents of each page is shown.

RECORD A SCENE
To record the current output as a Scene in the current page, press **[record scene] [F/A]** (Scene number).
If the CROSSFADE rotary fader is set to a time other than zero, that time is recorded in the Scene and will be used when the Scene is played back. If the CROSSFADE is set to zero, no fade time is recorded and the CROSSFADE rotary fader can be used *live* when the Scene is played back.

GRAB THE OUTPUT IN GRAB MASTER
To record (grab) the current output into the Grab Master, press **[record scene] [F/A]** (Grab Master)

RECORD A CHASE
To record a Chase in the current page, press **[record chase] [F/A]** (Chase number).
Each step of a Chase consists of either a previously recorded Scene or a snapshot of the **MINIM** output.
- To add a Scene as a step, press **[PAGE]** (optional) **[F/A]** (Scene number).
- To record a snapshot (of the current output) as a step, press **[record scene]**
- Continue to add steps as above.

If a SPEED or CROSSFADE rotary fader is active and set to a value other than zero, that value is recorded in the Chase and will be used when the Chase is played back. If a rotary fader is active and set to zero, no value is recorded for that rotary fader and it can be used *live* when the Chase is played back.
When all steps have been recorded, complete the Chase by pressing **[record chase].**

PLAYBACK A SCENE OR CHASE
To replay a recorded Scene or Chase, press **[MODE]** until the "scene" LED lights and press **[MEMORY]** until the "run" LED lights. If necessary, select the page containing the Scene or Chase using **[PAGE]**.
Fade up the Playback containing the Scene or Chase and also fade up the Red Preset Master.
SCENES If no times are recorded in memory, rotate the **[crossfade]** fader until active to adjust fade times "live".
CHASES If no crossfade or speed (rate) has been recorded in memory, rotate the **[crossfade]** fader to adjust fade percentage between steps and/or the **[speed]** fader to adjust the rate of speed in BPM "live".
To stop a running Chase, start a stopped Chase, manually step a Zero speed chase or re-trigger a Chase set to single shot effect, press and hold **[start/stop/step]**, tap **[F/A]** (Chase number)

EDIT A SCENE OR CHASE
Press and hold **[MEMORY]** until the "edit" LED lights. Press **[PAGE]** (optional) **[F/A]** (memory to edit).
SCENES To edit a channel level, press and hold **[F/A]** (channel number) then use the **[FLASH/LEVEL]** fader to set the level. To edit fade times, rotate the **[crossfade]** rotary fader until the LED illuminates (this indicates that you have matched the recorded crossfade level) then adjust using the time scale printed around the rotary fader.
To exit, press and hold **[MEMORY]** until the "run" LED lights. Changes are automatically saved.
CHASES To control the **SPEED**, rotate the **[speed]** rotary fader until the LED starts flashing. This indicates that you have matched the recorded speed, which then can be adjusted using the flashing LED to gauge the speed. To change the **FADE** between steps rotate the **[crossfade]** rotary fader until the LED illuminates (this indicates that you have matched the recorded crossfade level) then adjust using the time scale printed around the rotary fader. To change the **EFFECTS** (direction, pattern or trigger), press and hold **[function]** then tap **[F/A]** (required effect).
To edit the levels in a step, press and hold **[start/stop/step]** (all steps light and current step flashes), tap **[F/A]** (step to edit). Press and hold **[F/A]** (channel number) then use the **[FLASH/LEVEL]** fader to set the level. Set other channel levels as desired.
To delete a step, press and hold **[start/stop/step]** (all steps light and current step flashes), tap [F/A] (step to delete). Press and hold [function], tap **[F/A]** (delete).
To add a step, press and hold **[start/stop/step]** (all steps light and current step flashes), tap **[F/A]** (the new step is inserted prior to the selected step). Press and hold **[function],** tap **[F/A]** (add). Either create the look on the output then press **[record scene]** or add an existing Scene, press **[F/A]** (Scene number).
To exit, press and hold **[MEMORY]** until the "run" LED lights. Changes are automatically saved.

CONTENTS

1.0 INTRODUCTION

Whether operating in manual or in memory mode, the **MINIM** has been designed for straight forward, uncomplicated ease of use. No sub-menus, no hidden button pushes – all functions presented in a clear and organised layout, utilising the familiar programming and playback systems popular on all LSC desks.

1.1   FEATURES

- 12 faders in 2 preset operation or 24 faders in wide preset operation, each with own flash button and indicator LED
- 3 pages of memory with 12 playback faders on each page – 36 total memories
- Each Playback can be either a Scene or Chase and up to 13 scenes/chasers can run concurrently
- Three Preset Masters – Red, Yellow and Grab
- Add/Solo button with flash level Master
- Edit and Preview of stored memories with channel level indicators
- Scene fade times from 0 – 30 secs
- Chase dipless crossfade rate from 0 – 100%
- Speed adjustment of Chase steps 0 – 999BPM
- Chase effects including Start/Stop/Step, random, bounce, single shot, forward direction, reverse direction, delete step and add step
- Audio Input with Bass step effect for Chases with audio level adjustment
- ¼" mono jack for connecting footswitches to remotely advance Chase sequences
- DMX512-A output on 5 pin XLR connector
- Integral fused power supply – input range of 190–260VAC, 47-65Hz.
  110VAC models available
- Compact - 440mm(w) x 352mm(d) x 90mm(h)
- Lightweight – 5kgs unpacked, 7kgs packed
- Rugged – two part corrosion protected metal chassis with rear screened polycarbonate front and rear panels, with EVA rubber side profiles.

OPTIONS

A number of useful options are available from LSC to compliment the **MINIM** lighting desk.

19" rack mount brackets A pair of metal side brackets that easily attach to the **MINIM** chassis and allow you to install the desk into horizontal or vertical 19" rack equipment or flightcases.

Memory Module   An external module that plugs into the COMMS PORT of the **MINIM**. Allows recorded memories to be stored externally from the desk.

Flightcase   Professionally built fully lined aluminium flightcase. Ideal for touring your **MINIM**, or for long term storage.

Dustcover   Smart hard wearing fabric desk cover with **MINIM** logo screened on top. Ideal for protecting the top surface of the desk from dust and other foreign matter.

1.3   CARING FOR YOUR MINIM

The **MINIM** is manufactured from quality components and will give many years of service if you take some basic precautions.

- Do not allow any liquids or foreign objects to enter the **MINIM**. If any liquids are spilt on the **MINIM**, the inside should be cleaned and dried as soon as possible. Only suitably qualified personnel should remove the covers and perform any such maintenance.
- Do not apply excessive force to any of the controls. Spare parts and service are available from your LSC distributor, but prevention is better than cure.
- When connecting any devices to the **MINIM**, make sure that all connections are correct before switching on the power. If any doubt exists, obtain the assistance of qualified personnel.
- If your **MINIM** is to be used "on the road", you should use the optional flightcase to protect the desk. Transport the **MINIM** with all faders in the fully down position. This gives the faders maximum protection from probable damage.
- When your **MINIM** is not in use, cover the upper surface with the optional dust cover.
- If the surface of your **MINIM** becomes soiled, clean it with a damp cloth. Do not use any powerful solvents. An alcohol swab may be used to remove any gum from labelling tape.
- Areas are provided below the faders for you to write identifying labels.   To prevent permanent marking of your **MINIM**, LSC recommends that you place strips of "write on" tape in these areas.

1.4   TERMINOLOGY

Certain button-stroke terminology is used throughout this manual to describe the particular operations being undertaken. Any text enclosed in these symbols **[   ]** refers to when that particular button needs to be **pressed**.
For example; Press **[record scene]**, means to press the record scene button.

Flash/Assign buttons are often abbreviated to F/A. If the button to be pressed is a Flash/Assign button (of which there are many) then it will be identified by naming it as follows; **[F/A]** (Name).

Some F/A buttons have **secondary functions** that are activated by holding down the function button and tapping the F/A button. These secondary functions are printed on the front panel below their F/A buttons.

CHANNEL
A Channel (Fader) is the basic element of a Lighting Control System. The number of dimmers/lights connected to this channel is variable depending on your installation and/or application. The most basic application will have just one dimmer & one light connected to each channel, so that as you vary the level of that channel, you vary the level of that dimmer & light.

LOOK
A lighting "LOOK" is the collection of channels at their various levels (intensities) that are contributing to the output of the **MINIM** at any one time. A "look" may be made up of a collection of channels or a single scene (see below) or a combination of several scenes. It may even be a single channel.

PRESET
When many channels are assembled in a group of adjacent faders they form a "Preset" and each channel in the preset has an individual fader to control its level. It is common to have two presets available to the operator. The first lighting "look" is created on one preset by fading up the required channels. The next lighting "look" is prepared (or "preset") on the other preset without appearing on stage (as its Preset Master is kept faded down). At the appropriate time, the first preset is faded down whilst the second preset is faded up. The next lighting "look" is now prepared on the first preset. These alternate crossfades from preset to preset form the standard operation of a manual preset lighting board.

PRESET MASTER
A Preset Master controls the overall level of all the channels in a preset (above). The **MINIM** provides a Red and a Yellow Preset Master to control the overall level of the red and yellow banks respectively.

GRAB MASTER
A Grab Master is similar to a Preset Master in that it can control the level of a number of channels. It differs from a Preset Master in that it does not have dedicated channel faders under its control. It "grabs" or stores the channels that it controls from other areas of the **MINIM**. Typically, it would be used to grab the current **output** of the **MINIM**.
When a grab is performed, an exact copy of the channels that are on (including their levels) is loaded onto the Grab Master. This is often referred to as taking a "snapshot".

SCENE
A Scene is a *recorded* group of channels (at their respective levels) plus fade times. Once you have recorded some Scenes, you may of course fade up several Scenes at once and record the combination as a new Scene.

CHASE
A Chase is a list of steps that are replayed in order, stepping continuously from one step to the next and automatically repeating the list when it has reached the end.

PLAYBACK
A Playback provides a means of playing back and controlling the overall level of a Scene or a Chase.

1.5   SOFTWARE
The software version of your **MINIM** can be momentarily displayed on the F/A LED's.
To display the software version, switch off the power to **MINIM** then press and hold the [MODE] and [MEMORY] buttons simultaneously whilst the power is switched on.
The version number of the software will be displayed on the LED's of the Yellow bank F/A buttons (version number) and the Red bank F/A buttons (revision number).

Example: Software version V1.2 will be displayed as follows – F/A Yellow #1 LED will light to indicate Version 1 and the F/A Red #1 and 2 LEDs will light to indicate Revision 2.

Refer Section 9.3 – "Upgrading the Software" for details to upgrade the software in the **MINIM.**

LSC has a policy of continuous improvement of its products. As the **MINIM** is a computerised lighting desk, its software is subject to this policy as new features are added and existing features improved.

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Whilst every care is taken in the preparation of this manual, LSC takes no responsibility for any errors or omissions.

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2.0 GETTING CONNECTED
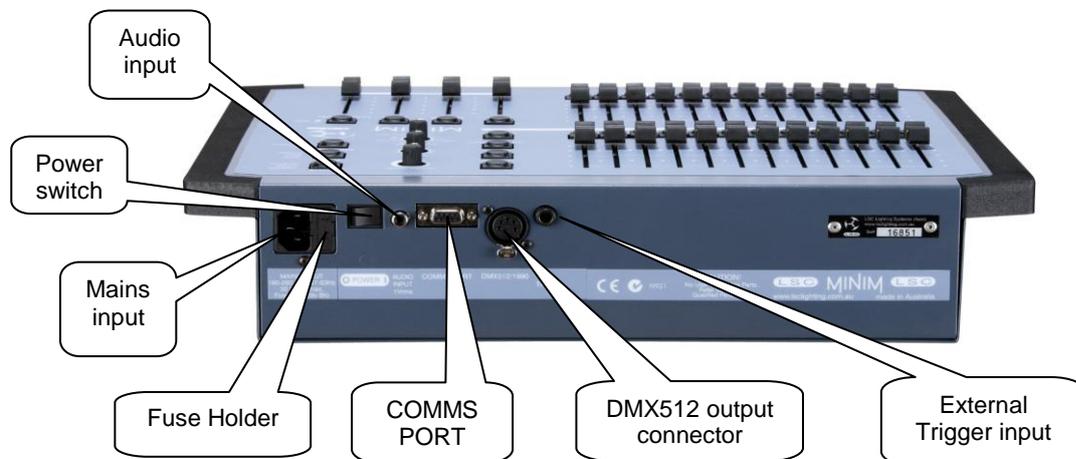
2.1   MAINS INPUT

An IEC Mains Input socket is located on the rear panel and a mains power lead is provided. The **MINIM** has an internal power supply that will operate on voltages between 190 volts and 260 volts AC with a frequency range from 47 to 63 HZ.   *110 volt models are available direct from the factory.*

Plug the mains lead into the MAINS INPUT socket and connect it to a source of mains power. A Power Switch located next to the Mains Input connector allows you to switch the **MINIM** off and on without removing the mains lead. The Mains Input socket is fused with a M205 sized 500mA fuse.

2.2   DMX512 OUTPUT

The **MINIM** transmits a digital signal based on the DMX512/1990 standard.
The output of the **MINIM** is DMX512-A "ready". DMX-512A is an upgrade of the standard that is still under development.
Connect a DMX512 data cable from the 5 pin AXR style connector on the rear panel to the DMX512 input of your equipment. Set the required DMX512 start address on your equipment.

At this point, with the mains power and DMX512 connected, the **MINIM** is ready to be operated. Simply switch on the "POWER" switch located near the Mains Input connector. The **MINIM** will commence its start up procedure and will then commence operating in exactly the same state that it was in when it was last switched off. All the Scenes and Chases will be as they were.

Hint; If you are starting a* new *lighting session, LSC recommends that you perform a "RESET" of the MINIM. This will ERASE all previously recorded memories and will prevent you being confused by previous recordings and settings. If you need to keep your memories, save them to the optional plug-in memory module.

You are now ready to start controlling your lights!

For details on the **COMMS PORT, AUDIO INPUT** and **EXT TRIG Input** – refer Section 9 of this manual – "Utilities".

3.0 FRONT PANEL LAYOUT
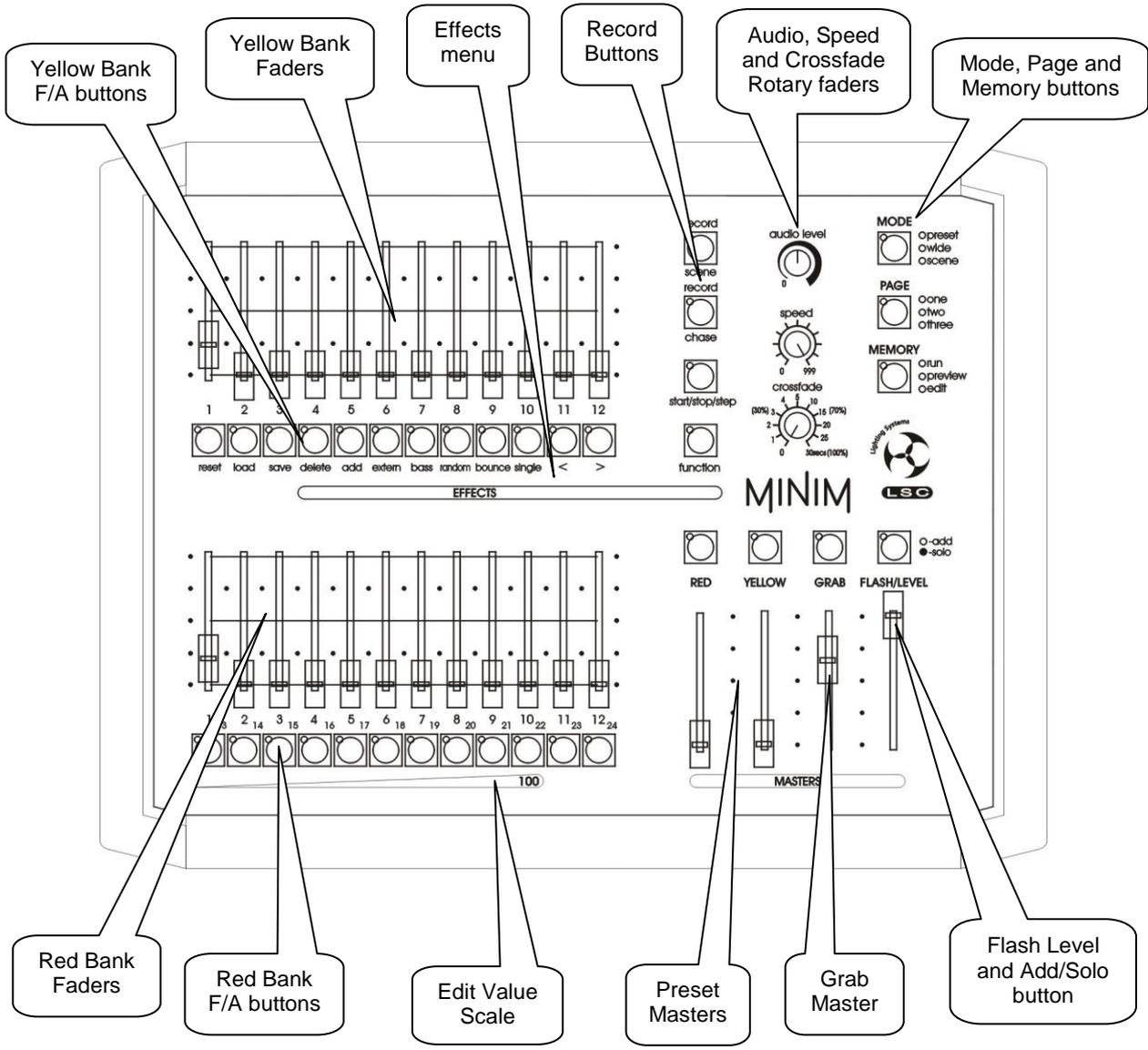
The front panel of the **MINIM** can de divided up into two areas:
- Preset Fader banks (red and yellow), and
- Master section (programming, editing and replaying)

Many of the buttons associated with each fader can have multiple functions. These functions are described in more detail under the relevant chapters within this manual.

All functions for the **MINIM** are laid out in front of the operator in a clear and concise arrangement. The following chapters will now deal with each function.

4.0   MODES OF OPERATION

4.1   OVERVIEW

The **MINIM** has two banks of faders.
- The Yellow Bank controls the levels of channels 1 to 12
- The Red Bank has different functions depending upon the current "mode" of the **MINIM** as selected by the MODE button. These modes are;
    - **PRESET** mode. The Red Bank controls the levels of channels 1 to 12.
    - **WIDE** mode. The Red Bank controls the levels of channels 13 to 24.
    - **SCENE** mode. The Red Bank faders become PLAYBACKS and control the levels of recorded Scenes or Chases.

You may freely change modes at any time during your operation of the **MINIM** and the current mode is **always shown** by the "LED" mode indicators beside the MODE button.

Once memories have been recorded, the MEMORY button is used to select how the stored memories are to be replayed, previewed or edited. The current mode is **always shown** by the "LED" indicators beside the MEMORY button.

4.2   PRESET MODE

Selecting PRESET mode only changes the operation of the Red Bank. The Red Bank becomes a duplicate of the Yellow Bank. These two identical banks (Yellow and Red) provide duplicate faders for the 12 channels**.** The output of each bank is controlled by its own master.

*Simplified block diagram of a **MINIM** in **PRESET** mode.*
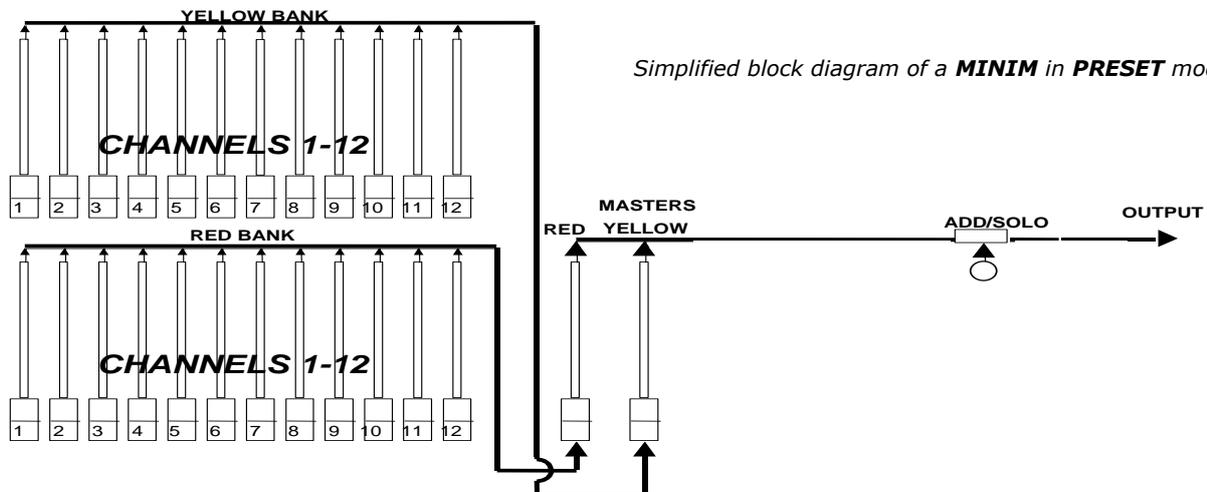
You create a lighting look by fading up your required channels on one of the colour coded banks and fading up the same colour master. By keeping the other master faded down, another look can be preset on the duplicate set of channel faders without the channels being revealed on stage. At the appropriate time, the new look is revealed by fading up its master whilst the first look is faded down with its master. The *next* look may now be prepared on the bank that has just been faded down. The fade times of the masters are set by the Crossfade rotary fader.

ADVANTAGE
This mode of operating is most useful in unrehearsed situations where the next "look" needs to be created "on the fly". The channel faders provide instant "hands on" control of any channel level.

DISADVANTAGE
Only half of the possible channels can be controlled and any look that needs to be used at a later time must be manually reproduced with the channel faders.

4.3   WIDE MODE

Selecting WIDE mode only changes the operation of the Red Bank. The Red Bank becomes a set of channel faders for the higher numbered channels. Wide mode utilises both the Red *and* Yellow Banks as a *single* wide bank of 24 channels. The yellow faders control channels 1 to 12 and the red faders control channels 13 to 24. There is an individual fader for **every channel**. The Yellow Master controls the total output of this single (wide) bank. The Red Master is not used in this mode.

*Simplified block diagram of a **MINIM** in **Wide** mode.*
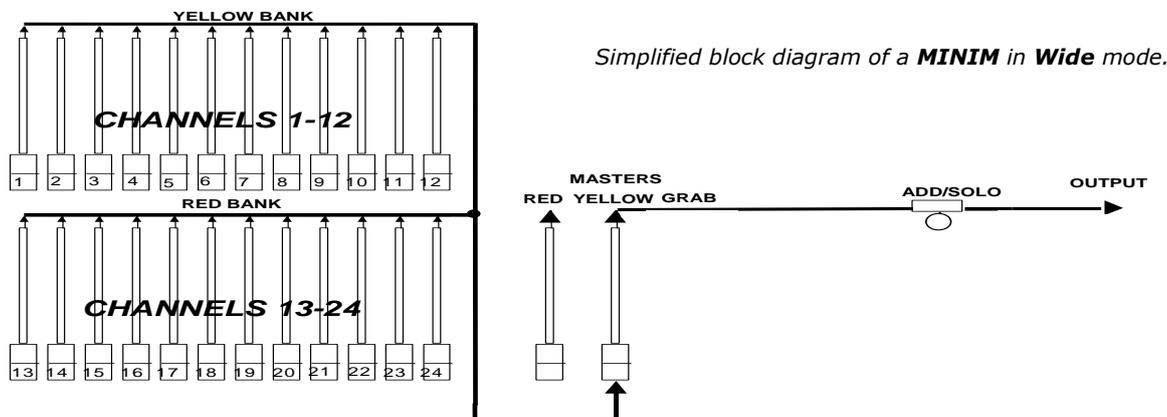
As in Preset mode, you can "balance" the look that you are creating by adjusting the intensities of the individual channels with their channel faders. You may fade this "look" up and down with the Yellow Master and of course, you may use the CROSSFADE rotary fader to set the fade time.

ADVANTAGE
You have access to **all** of the **channels** that are available on the **MINIM**. This is most useful when you are recording Scenes as you can utilise all channels to create your Scenes. (See "Scene Mode" below).

DISADVANTAGE
You do not have a second bank on which to create the next look. You can perform crossfades to another "look" by utilising the Grab Master as a "phantom" bank – see Section 7.4.

4.4   SCENE MODE

Selecting Scene mode only changes the operation of the Red Bank. In Scene mode the faders of the Red Bank become Playbacks containing **Scenes** or **Chases.**

*Simplified block diagram of a **MINIM** in **SCENE** mode.*
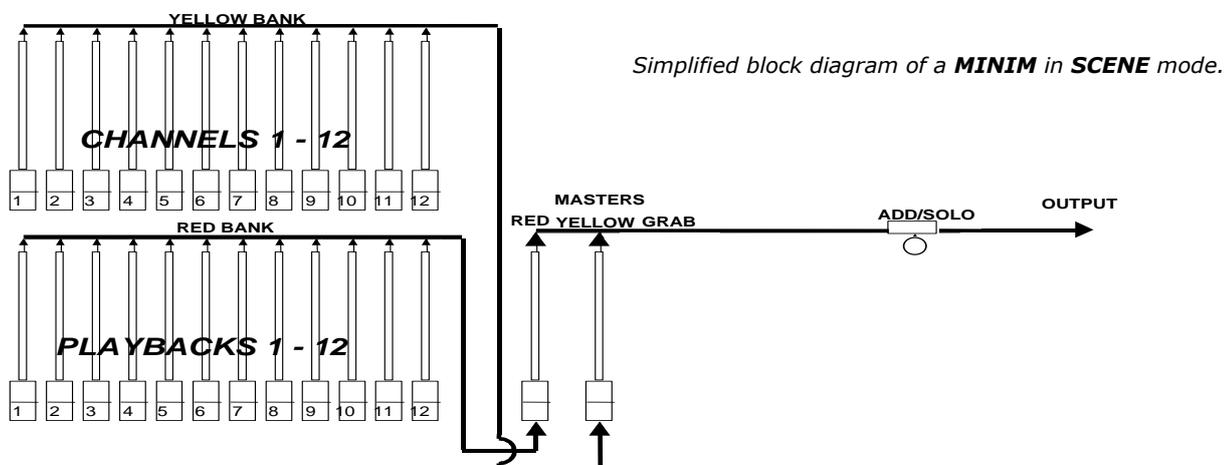
Scenes and Chases can be *recorded or edited* whilst operating in any of the three modes but the Red Bank may only be used to *replay* Scenes and Chases in Scene mode.

ADVANTAGE

During rehearsal (in any mode), each lighting look can be created and "recorded" into a Scene, (with its own fade time if required). During the performance (in Scene mode), the Playback containing each Scene is simply faded up when required. The **MINIM** remembers (in non volatile memory) all the channels and their levels together with the fade times for all of the Scenes. You may also use the Red Playbacks to play Chases that you have recorded.

4.5   FADE TIMES

When a timed fade is in progress either from the CROSSFADE rotary fader or from memory, the F/A LED of the fader will flash.

MASTERS

When a Red, Yellow or Grab Master is moved, the output level of that master will always progress towards the current physical position of that master at a rate set by the CROSSFADE rotary fader.

For example, if a crossfade time of 3 seconds has been set, then to execute a fade in exactly 3 seconds, the master must be moved from bottom to top in less than 3 seconds. If you take longer than 3 seconds to move the master, then the fade will keep pace with the fader movement.

A fully manual fade is achieved by setting the crossfade times to 0 seconds. The fade will then *instantly* follow the position of the master fader as you move it.

PLAYBACKS

When the **MINIM** is in SCENE mode, the Red Bank faders are used to playback Scenes or Chases that you have recorded in them.

SCENES

When a Scene is recorded it looks at the current setting of the CROSSFADE rotary fader.
- If the CROSSFADE rotary fader is set to zero, no times are recorded in the Scene. When the Scene is played back, the Red Playback fader is under the live control of the CROSSFADE rotary fader. It operates in the same manner as the masters described above.
- If the CROSSFADE rotary fader is set to any value above zero, that exact time is recorded in the Scene. When the Scene is played back, the recorded time is used by the Red Playback fader. The CROSSFADE rotary fader will have no control during playback of the Scene.

CHASES

When a Chase is recorded it looks at the current setting of the CROSSFADE rotary fader and the SPEED rotary fader.
- If the CROSSFADE rotary fader is set to zero, no crossfade times are recorded in the Chase. When the Chase is played back, the crossfade between steps is under the live control of the CROSSFADE rotary fader.
- If the CROSSFADE rotary fader is set to any value above zero, that exact time is recorded in the Chase. When the Chase is played back, the recorded time is used to crossfade between steps. The CROSSFADE rotary fader will have no control during the playback of the Chase.
- If the SPEED rotary fader is set to zero, no SPEED is recorded in the Chase. When the Chase is played back, the SPEED is under the live control of the SPEED rotary fader.
- If the SPEED rotary fader is set to any value above zero, that exact speed is recorded in the Chase. When the Chase is played back, the recorded SPEED is used. The SPEED rotary fader will have no control during the playback of the Chase.

If a playback contains a Chase, then the Playback fader always performs manual fades of the overall Chase intensity level. The position of the fader instantaneously sets this level

CHANNELS

All individual channel faders perform manual fades. The position of the fader instantaneously sets its level.

4.6   MEMORY RUN

The MEMORY RUN mode is used to playback the previously recorded Scenes and Chases. The **MINIM** must also be in SCENE mode, so the Red Bank faders are acting as Playbacks for the stored memories. For memory based shows, this configuration ("scene" and "run") is the common playback mode.

4.7   MEMORY PREVIEW

MEMORY PREVIEW mode is used to preview previously stored memories without revealing them on the output. The contents of a previewed Scene or Chase is shown on the F/A channel buttons including any associated times and speeds. Normal playback of Scenes or Chases is still maintained whilst in PREVIEW mode.

To preview a memory, press [MEMORY] until the preview LED lights then press **[F/A]** (memory to preview). To see which memory locations have been used, tap **[PAGE]** to select the required page then press and hold **[PAGE]**. The playback flash/assign buttons containing Scenes will light, Playbacks containing Chases flash quickly and empty Playbacks are not lit.

When you press any RECORD button or change MEMORY to "preview" or "edit" mode, all Playback flash/assign buttons flash twice (to show that they are possible memory locations), then they show their contents as above. If you change pages whilst in "record", "preview" or "edit" modes, the contents of each page is shown.

4.8   MEMORY EDIT

The MEMORY EDIT mode is very similar to the MEMORY PREVIEW mode, except that the contents of the memory can now be altered. EDIT mode allows you to adjust channel levels and fade times in Scenes (see Section 5.5) and to adjust all Chase parameters including the adding or deleting of steps (see section 6.5).

4.9   MODE/PAGE FREEZE

A MODE/PAGE FREEZE feature prevents the contents of a live fader from being changed if its level is above 5% when a MODE (preset/wide/scene) or PAGE (one/two/three) is changed.

The current contents of any "live" fader is held until such time as that fader is faded down below 5% when it will be automatically updated with its **pending** assignment for the new mode or page. This prevents Scenes, Chases or channels "crashing in" on stage if their fader is contributing to the output when a different mode or page is selected.

Whenever there is a pending Scene, Chase or channel change due to a MODE change or PAGE change, the relevant MODE "LED" indicator (preset, wide or scene) or the relevant PAGE "LED" indicator (one/two/three) will flash. This acts as a warning to you that the flashing mode and/or page is not currently selected but it is contributing to the current output. Therefore, the contents of a fader on the Red Bank may change (to the current mode or page) after it is faded down.

4.10 FADER MATCHING/CAPTURE

As you change Memory Modes on the **MINIM** (run/preview/edit) the CROSSFADE and SPEED rotary faders can be changed without affecting other modes. For example, if you are in Run Mode and the speed is set to 999, then you edit another Chase and rotate the speed to zero without changing the speed of the running Chase. Therefore when you return to Run Mode the fader is no longer active, as it is not set to the original 999 level. 'Matching' is used to get control back without any sudden jump in level.

If a rotary fader is not active (Eg. Requires level matching to activate), then the LED indicator will not be lit. Rotate the fader clockwise/counterclockwise until you match the level, the LED will light or start flashing to indicate that the fader has captured the level and is now in control.

5.0 SCENES

5.1   OVERVIEW

A SCENE is a recorded snapshot of the **MINIMs** *output*, together with fade time settings, that is stored in non volatile memory. Scenes are recorded by Page and Scene number. Scenes may be randomly recorded into any Page and Scene number at any time, irrespective of the current "MODE" (Preset, Wide or Scene) of the Red Bank.

Scenes may be created "blind" (not appearing on the output) using the "EDIT " function.

Scenes can be replayed on the Red Bank (in Scene mode) or as steps in Chases. When a page is changed or when the Red Bank is selected to "SCENE" mode, the contents of the indicated page (Scenes and Chases) are loaded into the Red Playbacks.

Scene Playback fade times may be controlled live from the CROSSFADE rotary fader or may be recorded in memory as part of the Scene. Individual fade time may be recorded for every Scene.

5.2   RECORDING A SCENE

To record a Scene, create the look on the bank faders with the Preset Master up,
then press **[record scene] [PAGE]** (optional) (select page 1, 2 or 3) **[F/A]** (Scene number).

Or to record a Scene in the Grab Master, press **[record scene] [F/A]** (GRAB)

When the **[record scene]** button is pressed, its LED will flash to show that it is active. All Playbacks will flash twice to indicate possible memory location choices, then Playbacks already containing Scenes in that page will light. (Playbacks containing Chases flash quickly and empty Playbacks are not lit.) This acts as a warning to you of existing Scene (and Chase) numbers and unused numbers in each page.

Note: Recording over an existing Scene or Chase number will erase the previous contents.

A Scene with *NO* channel levels on the output will not be recorded. (See BLIND RECORDING below)

RECORDING FADE TIMES

If a Scene is recorded with the CROSSFADE rotary fader set to zero, no crossfade setting will be stored with the Scene. When the Scene is played back the CROSSFADE rotary fader can be used to vary the fade time of the playback fader containing the Scene.
If a Scene is recorded with the CROSSFADE rotary fader set **above** zero, the crossfade setting will be stored with the Scene. To add a crossfade to the recorded Scene, adjust the **[crossfade]** rotary fader to set the required setting prior to ending the recording of the Scene. When the Scene is played back the Playback fader containing the Scene will use the setting when the Scene was recorded. The CROSSFADE rotary fader cannot be used to vary the fade time.

The crossfade can be varied after recording by editing the Scene.

ABANDONING A RECORDING

When you have created your look, pressed RECORD SCENE, set the fade time and/or selected a page, you still have one last chance to abandon the Scene you are recording without destroying any previously stored memories.
To abandon the RECORD SCENE function, press **[record scene]** a second time, prior to pressing a **[F/A]** (scene number) button.

BLIND RECORDING
Scenes may be created blind (not appearing on the output) by **editing** an existing Scene that is no longer required.. See Section 5.5 - "Edit a Scene" below for details.

Hint; If you are required to record several "blind" Scenes during a performance, make some preparations by recording the required Scene numbers prior to the show. The MINIM will not record a Scene if there are no channels on the output so set only 1 channel ON at a low level and record it in the scene numbers. When you know the channel numbers that you will need in the blind scene, edit that Scene and set the single channel to 0 and turn on the required channels.

PLAYBACK A SCENE
Scenes are normally played back in MEMORY RUN mode.
Press and hold **[MEMORY]** until RUN LED is lit.
Scenes may be replayed on the Red Playbacks (in Scene mode) or on the Grab Master (if previously recorded in the Grab Master).

To playback a Scene recorded on the Grab Master, simply fade it up.
To playback a Scene on a Red Playback, press **[MODE]** until the Scene LED is lit.
Press **[PAGE]** until required page number is lit. Fade up Red Master and then fade up Red Playback to reveal the Scene.

If the Scene to be replayed *has no* stored fade times, then fade times can be controlled live using the CROSSFADE rotary fader. The fader is only active when the LED is lit. To make it active rotate it clockwise/counterclockwise until the LED lights. This now indicates that you have now matched the position of the fader to the last active setting in Playback mode.

Note: CROSSFADE is global, adjusting it will change ALL active Scenes.

If the Scene to be replayed *has* a stored fade time the CROSSFADE rotary fader has no effect.

Scenes stored on the Grab Master are played back exactly as detailed above, except the PAGE button has no influence. Times are controlled exactly the same way.

5.4   PREVIEW A SCENE
This function allows you to view the contents of a Playback fader or the Grab Master without revealing the Scene on stage. The Preview function will work irrespective of which mode (preset, wide or scene) the **MINIM** is in.

To preview a Scene, press **[MEMORY]** button until PREVIEW LED is lit. All Playbacks will flash twice to indicate possible memory location choices, then Playbacks already containing Scenes in that page will light. (Playbacks containing Chases flash quickly and empty Playbacks are not lit.)
Press and hold **[F/A]** (Scene number to preview) and the channel levels of the Scene will then be displayed on the F/A LEDs. Release **[F/A]** and then the Playbacks will flash twice again and reveal the stored memories. At this point you can choose another memory to preview.
If a Scene has a stored fade time, by holding the **[F/A]** button, you will see the channel levels fade in on the LEDs. Releasing the **[F/A]** button will instantly snap the Scene off.

Note: Preview is always "blind" – the current stage output is not affected.

5.5   EDIT A SCENE

To enter the MEMORY EDIT mode, press and hold **[MEMORY]** until the EDIT LED is lit. Similarly, to exit the MEMORY EDIT mode, press and hold **[MEMORY]** until the RUN LED is lit.

You may **edit** a Scene live or blind (faded down). If the Scene is faded up on stage you will see the changes. When you edit the Scene its channel levels are shown on F/A LED indicators.

To edit a Scene, press and hold **[MEMORY]** button until EDIT LED is lit. All Playbacks will flash twice to indicate possible memory location choices, then Playbacks already containing Scenes in that page will light. (Playbacks containing Chases flash quickly and empty Playbacks are not lit.)
Press **[F/A]** (Scene number). The channel levels of the Scene will be displayed on the F/A LEDs and the FUNCTION button LED will flash.

ADJUSTING CHANNEL LEVELS

Press and hold **[F/A]** (channel number) and the percentage level of that channel in the Scene will be displayed on the Edit Value Scale on the Red Bank F/A buttons LEDs. The display shows the level of channel output in 5% increments using the 10 LEDs – A LED at full intensity indicates 10% and a LED at ½ intensity indicates 5%.

Whilst holding the **[F/A]** (channel number) you can adjust the level by fading the **[FLASH/LEVEL]** fader. The Edit Value Scale will follow the level set by this fader. The fader does not become active until the level of the fader matches the recorded level, thus preventing a sudden jump in level.
To remove a channel set its level to zero. Release the **[F/A]** (channel number). The new level will be recorded. If desired, select a new channel to adjust, including channels not previously recorded in the step.

ADJUSTING FADE TIMES

To adjust a stored time, rotate the **[crossfade]** rotary fader clockwise/counterclockwise until the LED lights (this indicates the previously recorded level) then set the time using the scale printed around the rotary fader.

If the crossfade time is set to zero, no crossfade setting will be stored with the Scene. When the Scene is played back the CROSSFADE rotary fader can be used live to vary its fade time.
If the crossfade time is set above zero, the crossfade setting will be stored with the Scene. When the Scene is played back it will fade in and out at the recorded time. The CROSSFADE rotary fader cannot be used to vary its fade time during playback.

To exit the EDIT mode, press and hold the **[MEMORY]** button until the RUN LED is lit.

5.6   DELETE A SCENE

To delete a Scene memory, record a blackout (no output) Scene over the existing memory. This will empty the Playback memory location.

To create a blackout, fade all three Masters to the fully down position and ensure that they have completed their fade by observing that their F/A LEDs are not flashing.
Press **[record scene] [F/A]** (scene number to be deleted)

6.0 CHASES

OVERVIEW

A Chase is a recorded list of steps that are to be replayed in order, stepping continuously from one step to the next and automatically repeating the list when it has reached the end. Each step in a Chase consists of a Scene or a snapshot of the output (which is taken when that step is added to the Chase). Up to 24 steps may be recorded for each Chase and up to 37 separate Chases may be recorded into the memory. 13 simultaneous Chases can be run at any one time.

Chases are recorded by page and Chase number. Page numbers are selected with the PAGE button and Chase numbers are selected with the red F/A buttons. Chases may be randomly recorded into any page and Chase number, however Scenes and Chases share the same memory locations within each page, so recording a Chase into the F/A of an existing Scene will REPLACE the Scene with the Chase (and visa-versa). Chases may also be recorded directly into the Grab Master.

Chase rate and crossfade times can be recorded in memory as part of each Chase.

Chases may be run in any of the following modes;
- FORWARD
- REVERSE
- BOUNCE (Auto reverse at each end)
- SINGLE SHOT (Run once and stop) (in either direction)
- RANDOM (computer generated random sequence)
- MANUALLY STEPPED FORWARD (Ideal for running sequences with an external "GO" button)
- MANUALLY STEPPED REVERSE

The Chase SPEED (rate) can be manually controlled or recorded into memory in BPM (Beats Per Minute).
Chase stepping may be synchronised to the beat of an Audio Input signal.
Chase stepping may be under the control of an external switch.

Traditionally, Chases will snap (instantly switch) from step to step but you may also elect to crossfade from step to step. The crossfade time can be manually controlled or recorded into memory.

A Chase may be edited. The contents of any step may be changed, the speed varied and steps may be added or deleted.

RECORDING A CHASE

To record a chase, press **[record chase] [PAGE]** (optional) (select page one, two or three) **[F/A]** (chase number) (any of the Red Bank Flash/Assign buttons)
Or to record a Chase in the Grab Master, press [record chase] **[F/A]** (GRAB)
Each step of a Chase can consist of a previously recorded Scene or a snapshot of the current output. Up to 24 steps can be recorded in each Chase.

To record a Scene as a step, select the required page by tapping **[PAGE]** (optional) then tap **[F/A]** (Scene number). You cannot record a Chase as a step in a Chase.

To record a snapshot of the output as a step, create the desired look on the output, then press **[record scene]**

Continue to record steps as above.

When all steps have been recorded, press [record chase] to end.

RECORDING THE SPEED (RATE)

If a Chase is recorded with the SPEED rotary fader set to zero, no speed will be stored with the Chase. When the Chase is played back the SPEED rotary fader can be used to vary the speed manually.

If a Chase is recorded with the SPEED rotary fader set above zero, the speed setting will be stored with the Chase.

To add a speed to the recorded Chase, adjust the **[speed]** rotary fader clockwise/counterclockwise until the LED lights or starts flashing (this indicates the previous playback speed) then set the rate using the flashing LED to gauge the speed.

The speed can be varied after recording by editing the Chase (see below).

RECORDING THE CROSSFADE TIME

If a Chase is recorded with the CROSSFADE rotary fader set to zero, no crossfade setting will be stored with the Chase. When the Chase is played back the CROSSFADE rotary fader can be used to vary the crossfade between steps manually.

If a Chase is recorded with the CROSSFADE rotary fader set above zero, the crossfade setting will be stored with the Chase.

To add a crossfade to the recorded Chase, adjust the **[crossfade]** rotary fader clockwise/counterclockwise until the LED lights (this indicates the previous playback crossfade setting) then adjust the rate using scale printed around the rotary fader.

The crossfade can be varied after recording by editing the Chase.

RECORDING DIRECTION MODE AND TRIGGER EFFECTS

When a Chase is recorded, it will be by default a forward running continuous Chase. You can set the direction (forward or reverse) or the pattern (continuous, single shot, bounce, random) or the triggering (speed, bass or external) and save these settings as part of the Chase.

At any time after selecting the Chase number and prior to ending the recording of a Chase, press and hold **[function]**. The F/A buttons of the Yellow Bank flash twice to show you the available options and then the current selections continue to flash.

Direction Button Flashing	Effect
>	Forward direction
<	Reverse direction

Pattern Button Flashing	Effect
None	Continuous
Single	Single shot in selected direction
Bounce	Bounce end to end
Random	Random patterns

Trigger Button Flashing	Effect
None	Stepping under speed setting
Bass	Bass Audio stepping
External	External switch stepping

Whilst holding **[function],** tap **[F/A]** (the required effect). The Pattern and Trigger buttons are a toggle function, where only one (or no) button can be selected at a time

The Effects can be varied after recording by editing the Chase.

6.3   PLAYBACK A CHASE

Chases are normally played back in MEMORY RUN mode. Press **[MEMORY]** until RUN LED is lit. Chases may be replayed on the Red Playbacks (in Scene mode) or on the Grab Master (if previously recorded in the Grab Master).

To playback a Chase recorded on the Grab Master, simply fade it up.
To playback a Chase on a Red Playback, press **[MODE]** until the SCENE LED is lit.
Press **[PAGE]** until required page number is lit. Fade up Red Master and then fade up Red Playback to reveal the Chase.

CONTROLLING A CHASE

If the Chase to be replayed has no stored speed (rate), then the speed can be controlled live using the SPEED rotary fader. The fader is only active when the LED is lit or flashing. To make it active rotate it clockwise/counterclockwise until the LED lights or flashes. This now indicates that the position of the fader has matched the last active setting in Playback mode.

Note: SPEED is global, adjusting it will change ALL active Chases.

If the Chase to be replayed has no stored crossfade, then fade rate can be controlled live using the CROSSFADE rotary fader. The fader is only active when the LED is lit. To make it active rotate it clockwise/counterclockwise until the LED lights. This now indicates that you have now matched the position of the fader to the last active setting in Playback mode.

Note: CROSSFADE is global, adjusting it will change ALL active Chases.

To stop or start a Chase, press and hold **[start/stop/step]** then tap **[F/A]** (Chase number). Each tap will start a stopped Chase or stop a running Chase. If the Chase is set to single shot mode, each tap will run a single shot of the Chase in the current direction. If the Chase speed is zero then each tap of the **[start/stop/step]** button will advance the Chase sequence by one step. This is particularly useful if you are playing a Chase sequence like a **Theatrical Stack**. With the use of the **[crossfade]** rotary fader, you can fade in a new Scene recorded as a step in the Chase whilst fading out the Scene (previous) presently on stage.

Chases which are controlled from an external source, such as the Audio Input or the External Trigger Input, will automatically advance when a trigger signal is received and the Red Playback Master has been faded up. See Section 9.0 – "Utilities" for further information.

Hint: *When using an external trigger the speed is automatically set to zero to prevent the Chase stepping by itself. When using an audio signal as a trigger (bass step), try setting the Chase speed to be slower than the average beat of the music. When the music stops, the Chase will continue to step.*

Chases stored on the Grab Master are played back exactly as detailed above, except the PAGE button has no influence. Times are controlled in exactly the same way.
See also Section 6.5 - "Editing a Chase" for control options.

6.4   PREVIEW A CHASE

This function allows you to view the contents of a Playback fader or the Grab Master without revealing the Chase on stage. The Preview function will work irrespective of which mode (preset, wide or scene) the **MINIM** is in.

To preview a Chase, press the [MEMORY] button until PREVIEW LED is lit. All Playbacks will flash twice to indicate possible memory location choices, then Playbacks already containing Chases in that page will flash quickly. Playbacks containing Scenes will light and empty Playbacks are not lit.
Press and hold [F/A] (Chase number to preview) and the Chase, as it was programmed, will replay on the F/A LEDs. The Chase pattern (single shot, bounce, random), direction, channel output per step will be displayed on the F/A LEDs progressing at the recorded speed.

Release **[F/A]** and then the Playbacks will flash twice again and reveal the stored memories. At this point you can choose another memory to preview, or if finished previewing, press **[memory]** to return to run mode

Note: Preview is always "blind" – the current stage output is not affected.

6.5   EDIT A CHASE

To enter the MEMORY EDIT mode, press and hold **[MEMORY]** until the EDIT LED is lit. Similarly, to exit the MEMORY EDIT mode, press and hold **[MEMORY]** until the RUN LED is lit.

You may **edit** a Chase live or blind (faded down). If the Chase is faded up on stage you will see the changes. When you edit the Chase, its channel levels for each step are shown on the F/A LED indicators. The LEDs will fade in the crossfade time (if any). Their final *intensity* reflects the levels of those channels in each step of the Chase.

To edit a Chase, press and hold **[MEMORY]** button until EDIT LED is lit. All Playbacks will flash twice to indicate possible memory location choices. Playbacks already containing Chases in that page will flash quickly. Playbacks containing Scenes will light and empty Playbacks are not lit.

Press **[F/A]** (Chase number to edit). The channel levels of the first step will be displayed on the F/A LEDs and the FUNCTION and START/STOP/STEP buttons LED will flash.

To view the number of steps in the Chase, press and hold the **[start/stop/step]** button. The bank fader F/A LEDs will light to indicate the number of steps (up to 24) and the current step will flash quickly. To change the current step to another, press and hold **[start/stop/step]** then tap the required **[F/A]** button (step number). The Chase will now advance to the selected step and the channel levels of that step will be displayed on the F/A LEDs. You can also step through the chase in programmed order by repeatedly pressing the **[start/stop/step]** button.

TO EDIT THE CHANNEL LEVELS OF A STEP IN A CHASE
Select the step to be edited (above) The channel levels in the step will be displayed on the F/A LEDs. To adjust a channel level, press and hold the **[F/A]** (channel number). The level of that channel will be displayed on the Edit Value Scale on the Red Bank F/A LEDs. The display shows the level of channel output in 5% increments using the 10 LEDs – A LED at full intensity indicates 10% and a LED at ½ intensity indicates 5%.
Whilst holding the **[F/A]** (channel number) you can adjust the level by fading the **[FLASH/LEVEL]** fader. The fader does not become active until the level of the fader matches the recorded level, thus preventing a sudden jump in level. The Edit Value Scale will follow the level set by this fader. To remove a channel set its level to zero. Release the **[F/A]** (channel number). The new level will be recorded. If desired, select a new channel to adjust, including channels not previously recorded in the step.

TO EDIT THE EFFECTS IN A CHASE
To change the recorded effect on a Chase, edit the Chase (above) then press and hold **[function]**. All EFFECTS LEDs will flash twice to indicate possible choices and then the current programmed effects will flash quickly.

TO CHANGE DIRECTION OF A CHASE
To change the direction, hold down the **[function]** button, then press **[<]** (reverse) or **[>]** (forward), then release **[function]**.

TO CHANGE PATTERN OF A CHASE
To change the Chase pattern, hold down **[function]** tap **[random]**, **[bounce]** or **[single]**, then release **[function]**.

TO ACTIVATE EXTERNAL TRIGGER TO RUN A CHASE
To link the External Trigger Input to activate the Chase, hold down **[function]** tap **[extern]**, then release **[function]**.

TO ACTIVATE AUDIO INPUT TO RUN A CHASE
To link the Audio Input to activate the Chase, hold down **[function]** tap **[bass]**, then release **[function]**.

TO ADD A STEP IN A CHASE
Edit the Chase (above) then press and hold the **[start/stop/step]** button and tap the **[F/A]** button (step number) to advance the Chase to the step where the new step is to be added. The new step will be inserted prior to the selected step. In order to add a step onto the end of a chaser select the 1st step and the new step will be inserted onto the end of the chaser.
Whilst holding down the **[function]** button, press **[add]**, then release **[function]**
The RECORD SCENE LED will flash to indicate that you can record a snapshot of the output.
To add a previously recorded Scene as a step, press **[PAGE]** (optional to select the page containing the Scene) then press **[F/A]** (Scene number).

To add a snapshot as a step, create the look on the output and then press [record scene].

HINT: *when recording a snapshot of the output as a step, remember to keep the Chase faded down so that it is not included in the new step.*

The new step has now been added.

TO DELETE A STEP IN A CHASE
Edit the Chase (above) then press and hold the **[start/stop/step]** button and tap the **[F/A]** button (step number) to advance the Chase to the step **that is** to be deleted.
Whilst holding down the **[function]** button, press **[delete],** then release **[function].**

The step number selected above will now be deleted. If you delete all the steps of a chase then the **MINIM** keeps a blank (blackout) step as the first step, to enable the editing and inserting of new steps.

TO CHANGE THE SPEED OF A CHASE
The recorded speed will be displayed by the flash rate of the SPEED LED indicator. If the speed has been recorded at zero level, then the LED will be permanently lit. To adjust the recorded speed, rotate the **[speed]** rotary fader clockwise/counterclockwise until the LED illuminates. This indicates that you have matched the recorded value and the rotary fader is now controlling the speed.

TO CHANGE THE CROSSFADE TIME OF A CHASE
To view the recorded Crossfade level of a Chase, rotate the **[crossfade]** rotary fader clockwise/counterclockwise until the LED is lit. This will indicate the recorded level. The level is now under the control of the rotary fader and any adjustments will now be saved in the Chase memory.

To exit EDIT mode, press and hold **[MEMORY]** until the RUN LED is lit.

6.6   DELETE A CHASE

To delete a Chase,
press **[record chase] [F/A]** (Chase number to be deleted) **[record chase]**

7.0 GRAB MASTER

7.1   OVERVIEW

The Grab Master is a multi function master. It can be used as either;
- A Scene master.
- A Chase master.
- A (phantom) Preset master.

You change its function by what you record in it.

7.2   GRAB MASTER AS A SCENE MASTER

The Grab Master can be used as a memory location for a Scene. In effect, it is creating another Scene that can be concurrently replayed along with the other 12 Playbacks on the Red Bank.

To record the output of the **MINIM** in the Grab Master, press **[record scene] [F/A]** (GRAB)

The contents of the Grab Master (including its fade time), may be edited in exactly the same manner as a Scene. See Section 5.5 – "Editing a Scene".

GRAB MASTER AS A CHASE MASTER

This is the same procedure as recording a Chase on a Playback except that the Grab Master is selected as the Chase number. The Chase in the Grab Master may be controlled and edited in exactly the same manner as a Chase in a Playback.

To record a Chase in the Grab Master, press **[record chase] [F/A]** (GRAB)
Each step of a Chase can consist of a previously recorded Scene or a snapshot of the current output. Up to 24 steps can be recorded in the Chase.
To record a Scene as a step make sure that the **[MODE]** button is set to Scene, press **[PAGE]** (optional) then tap **[F/A]** (Scene number). You cannot record a Chase as a step in a Chase.

To record a snapshot of the output as a step, create the desired look on the output,
then press **[record scene]**
Continue to record steps as above.
.
 When all steps have been recorded, press [record chase] to end.

GRAB MASTER AS A PHANTOM PRESET MASTER

When you perform a "Grab" and then fade up the Grab Master, it allows the Preset Masters (and hence the channel faders and/or Playbacks) currently producing the output to be faded down whilst the Grab Master maintains the output. This allows the next look to be preset "blind" on either of the preset banks. This is most useful in WIDE and SCENE modes as the Grab Master effectively provides a second (or "Phantom") bank.

In a typical operation, the current look is created on any of the channel faders or Playbacks. To enable the next look to be created, take a "Grab" of the output **[record scene]**, **[F/A]** (GRAB), fade up the Grab Master to full and then fade down the Preset Masters. The look on stage is maintained by the Grab Master. Preset the next look using any of the channel faders or Playbacks. To crossfade to the next look, simply fade up the Preset Masters and fade down the Grab Master. In order to create the next look, "Grab" the current look in the Grab Master, fade it up to full and then fade down the Preset Masters. As before, create the next look "blind" on the channel faders or Playbacks.

You may continue to "Preset" and "Grab" for every new look that you require.

8.0 FLASH

8.1 OVERVIEW

The FLASH section of the **MINIM** utilises the FLASH/ASSIGN buttons in the fader bank sections and the FLASH buttons of the Master's to provide extensive flashing control. When a channel is "flashed" (also known as "bumping") it can be either added to the current output of the desk or it can be "soloed" (also known as swap or kill) where it replaces the current output of the desk. You may Flash any channel or multiple channels, any Playbacks, any master, or any multiple combination of the above at the one time. The only limit is your ability to hold down multiple buttons. The FLASH function is a momentary action. As soon as **all** Flash buttons are released, normal output is restored.

There are no times associated with the FLASH function. All actions are instantaneous.

8.2 ADD/SOLO MODE

You may select what effect the FLASH/ASSIGN buttons have on the *output* of the **MINIM***,* by selecting either ADD mode or SOLO mode.
Pressing the **[add/solo]** button will toggle from one mode to the other.
SOLO mode is indicated when the LED indicator in the ADD/SOLO button flashes.
- In ADD mode, pressing any FLASH/ASSIGN button will add the flashed channels to the output (at the FLASH control level) without having any effect on the current output of the **MINIM**
- In SOLO mode, pressing any FLASH/ASSIGN button will add the flashed channels to the output (at the FLASH control level) and at the same time it will KILL (black out) all other output of the **MINIM**. The flashed object is now the solo output from the **MINIM**.

8.3 FLASH/LEVEL

The FLASH/LEVEL Master sets the *percentage level* at the output of the FLASH section for all channels when they are flashed. For individual channels the FLASH/LEVEL sets the level of any flashed channels. For the contents of any Playback it will be the *percentage* of the channels recorded level.

For example, if the FLASH/LEVEL is set to its mid (50%) position;
- Flashed **channels** will come on at a level of 50%.
- If a Scene is Flashed and it contains a channel at a level of 80% then that channel will come on at 40% (50% of 80%).

If the FLASH/LEVEL Master is set to minimum, then no channels will come on when a FLASH/ASSIGN button is pressed.

Warning: Setting the FLASH/LEVEL Master to minimum and the ADD/SOLO mode to SOLO will cause all of the FLASH buttons to act as DBO (Dead Black Out) buttons because pressing a FLASH button will cause its channel(s) to come on at 0% and all normal output to be killed.

The FLASH/LEVEL Master is also used in EDIT mode for adjusting channel levels in Scenes and Chases. Refer to Section 5.5 – "Edit a Scene" and Section 6.5 – "Edit a Chase", for more details.

9.0 UTILITIES

RESET

SOFT RESET

Performing a reset will **ERASE** all the recorded memory from the **MINIM**. All Scenes and Chases are erased. If your memories are required, save them to the optional External Memory Module (see below). This is known as a "SOFT RESET".

To perform a SOFT RESET,
>   Ensure the **MINIM** is in MEMORY RUN mode.
>   Press and hold **[function]** and **[F/A]** (reset) for 5 seconds.
>   At the completion of the reset the F/A button stops flashing.

LSC also suggests that a SOFT RESET is performed each time you start a new show, as it is a quick way to ensure that ALL memories are deleted and ensures that the console is set to the default operating state.

HARD RESET

In the unlikely event that the **MINIM** fails to respond to your button strokes or fader movements, the operating system may be reset so that the software may initialise and recommence normal operation. This is known as a "HARD RESET".

To perform a HARD RESET,
>   Turn the Power Switch off.
>   Press and hold **[function]** and **[F/A]** (reset) whilst turning on the console. This operation will require two hands to prevent any accidental activation.

9.2 EXTERNAL MEMORY MODULE

Memories created and stored in the **MINIM**, can be externally saved and then reloaded from an external Memory Module. Each Memory Module can hold up to a maximum of four complete shows. This module is optional and is available for purchase from LSC or your nearest distributor. When you save or load a show from the Memory Module, you copy the entire contents of the **MINIM's** memory – including all Scenes and Chases.

SAVE SHOW TO MEMORY MODULE

To save a show, plug-in the Memory Module to the **MINIMs** "COMMS PORT". If a Memory Module is not plugged in, then the **MINIM** will detect this and not flash the **[F/A]** (save) LED.

Ensure the **MINIM** is in MEMORY RUN mode
Press and hold **[function]** then press and hold **[F/A]** (save) at the same time, for a period of 5 seconds, then release both.

The first four LEDs on the Red Bank will flash twice to indicate possible show number choices. If previous shows have already been loaded into the Memory Module, the Red Bank LEDs will be lit to indicate show numbers already allocated. It is possible to write over an existing show at this stage, so it is recommended to use a free location if you are unsure what is presently loaded.

Press **[F/A]** (show number) to save the show.

Saving a show takes a few moments. A progress meter is displayed on the Edit Value Scale LEDs. During this time normal operation of the **MINIM** is not possible.

LOAD SHOW FROM MEMORY MODULE

When you load a show from the Memory Module, you replace the entire contents of the **MINIM's** memory with the show data on the Memory Module. This includes all Scenes and Chases.

To load a show, plug-in the Memory Module to the "COMMS PORT". If a Memory Module is not plugged in or if the Memory Module is empty, then the **MINIM** will detect this and not flash the **[F/A]** (load) LED.

Ensure the **MINIM** is in MEMORY RUN mode
Press and hold **[function]** then press and hold **[F/A]** (load) at the same time, for a period of 5 seconds, then release both.

The **MINIM** will interrogate the Memory Module to see what shows exist. The show numbers saved will be flashed on the corresponding Red Bank LEDs.

Press **[F/A]** (show number) to load the selected show.

Loading a show takes a few moments. A progress meter is displayed on the Edit Value Scale LEDs. During this time normal operation of the **MINIM** is not possible.

WARNING: Once a load from the Memory Module is initiated, the current contents of the MINIM's memory will be erased and cannot be recovered.

Note: If a save or load error occurs, the MINIM will stop all data transfer, flash all LED's on the front panel for 5 seconds and then resume to its state prior to the save or load function. Try the save or load again and if the same problem persists, then LSC recommends changing the Memory Module with another. If data errors still occur, then contact LSC or your nearest service agent.

9.3 UPGRADING THE SOFTWARE

mLINK is a LSC communication program that runs on a PC based computer. The **mLINK** cable connects a personal computer (PC) comm port to the **MINIM** (COMMS PORT) to enable new software to be loaded into the **MINIM**. On power up, the **MINIM** sends a request out of its Comm port asking if the **mLINK** program is listening. If **mLINK** is not there, the **MINIM** continues on and ignores any further communications. If **mLINK** is there it responds and the **MINIM** and **mLINK** then establish a communications channel. At this point, **mLINK** tells the **MINIM** that it has new software to be loaded and instructs the **MINIM** to go into programming mode. **mLINK** then sends the new program to the **MINIM**. At the end of this operation, the **MINIM** will re-start, running the new software.

- The **mLINK** program is designed to run on any type of DOS based PC system, although it will also run on a Windows based system. It will not operate on Apple, Unix or Linux systems.
- Create a subdirectory on the C: drive named "mlink" for the **mLINK** program.
- Copy the distribution file (named mLinkZip.exe) from the website or off the floppy provided, into this directory. This is a self-extracting zip file.
- Open a Command Prompt (DOS) window and change to the directory created above. This is usually a command similar to cd\mlink
- Type "mLinkZip" (without the quotes) followed by the enter button.
  This will extract the following files into the **mLINK** directory.
  mlink.exe   The upgrade utility program.
  minim.bat   Default batch file for the **MINIM** control desk.
  mlink.pdf   An Adobe PDF of this help file.

The **mLINK** kit from LSC also contains the following file:

minv???.s19   Software for the **MINIM** desk.   (where ??? is the version number).

This will be the current software for the **MINIM** when your **mLINK** kit was purchased. The latest version of the **MINIM** software can always be obtained from **www.lsclighting.com.au**

mLINK PROCEDURES
- Before you begin, we recommend you save your show memories to the optional plug-in memory module.
- Turn the **MINIM** OFF.
- The **mLINK** program connects to your computer via one of its serial communication ports (COM1 or COM2). The default is COM1, which is usually a 9-pin D style connector. On your computer a mouse or modem may be using COM1. In this case COM2 can be used.
- Connect the **mLINK** cable to the COMMS PORT on the **MINIM** and to the COM1 or COM2 port on your PC. If using COM2 you may need to obtain an adaptor to enable the 9-pin cable to connect to the 25-pin connector on the computer (supplied as part of the purchased **mLINK** kit). See also the note below.
- On the computer, type the following command: "minim"

Note: Your PC generally has a minimum of two serial ports named COM1 and COM2. If your computer is currently using COM1, you will need to use COM2 for the mLINK. For COM2 use, the command typed must include a space and the number 2 after the above commands. e.g. "minim 2".

Turn the **MINIM** ON.

- The upgrade process will begin. Dots will be printed to the PC computer screen as each record is written to the **MINIM**. This will take some time.
- When the update is complete, "End Record" will be shown on the computer screen after which the **MINIM** will restart and perform a RESET, thus erasing all memories.
- The **MINIM** is now ready for normal operation. Disconnect the **mLINK** cable.
- You can exit the DOS window on Windows by typing "exit"

- If you need to stop the **mLINK** program, hold the control button (Ctrl) and push Z button. (^Z)

TROUBLESHOOTING

If you are experiencing problems with the upgrade try the following hints:

- Check which COM port you are using and that you are entering the correct command for that port.
- The **MINIM** requires the PC to respond to its initial request within a certain amount of time. If your PC is slow and/or doesn't respond to this request within the required time, the **MINIM** will conclude that there is no **mLINK** attached and will move to its normal operation mode. This is very hard to predict, as it is very PC dependent. If you are using Windows 95 or 98, try starting the PC in MSDOS mode. This usually solves the problem. If you are running a different version of Windows try running **mLINK** in a window or as a full screen (Hold down the ALT button and push the enter button to change between these modes.
- If there still appears to be no communication at this point, then the next step is to put the **mLINK** program into verbose mode. Type "dir" at the command prompt and look for the file for the **MINIM**. That is, for version 0.90 the file name will be minv090.s19. The 090 (used here as an example) is the version number of the software. The numbers you see may be different depending on the version of software you are upgrading to.

  Type the following at the command prompt on the PC:
  mlink 1 U *minv???.s19*/v   - For COM 1
  or
  mlink 2 U *minv???.s19*/v   - For COM 2

  Ensure the cable is connected between the PC and the **MINIM** and then power up the desk. You should now be able to see messages being sent and received by the PC

By typing "mLINK" (without the quotes "), the following will be displayed on your computer's screen.

```
LSC Lighting Systems Aust. Pty. Ltd.        http://www.lsclighting.com.au
MLINK version 1.0
Usage: mlink <COM port#> <command> [<filename.s19>] [/v]
The <command> options are:
      U -  upload file
      B -  boot version
      O -  original code version
      N -  new code version
      H -  H/W version
```

mLINK CABLE DETAILS

The cable requires 3 conductors, Tx, Rx and common. Cable type is a standard RS232 type serial cable fitted with a 9 pin D-type Male at the MINIM end and at the other with either a 9 pin or 25 pin D-type Female depending on the comm port connector on your computer.

	MINIM end 9 pin D-type Male (inline)	PC end 9 pin D-type Female (inline)	PC end 25 pin D-type Male (inline)
COMMON	5	5	1+7
Tx	3	3	2
Rx	2	2	3

Note: When the mLINK package is purchased from LSC, a DB25 adapter is provided.

9.4   AUDIO INPUT

The **MINIM** is fitted with a RCA (phono) type socket to accept an audio signal. The audio signal should have a nominal level of 1 volt RMS (line level). The audio signal can be used to trigger the stepping of a Chase (or chases) by selecting the BASS STEP function.
An AUDIO LEVEL rotary fader is used to adjust the sensitivity of the audio signal input. If the bass signal from the music is weak, then the AUDIO LEVEL will need to be increased to activate the Chase stepping.

To activate the Audio Input to a Chase:
Press and hold **[MEMORY]** until the EDIT LED is lit.
Select the Chase to edit, press **[F/A]** (Chase number). hold **[function]** tap **[F/A]** (bass).
Tapping **[F/A]** (bass) will toggle the bass on or off.

Exit EDIT by pressing and holding **[MEMORY]** button until RUN LED is lit.

The Chase is now controlled by the Audio Input. Fade up the Red Playback containing the Chase and also the Red Preset Master. Adjust the **[audio level]** rotary fader until the Chase begins to step. If the CROSSFADE rotary fader is set at 0 (zero), each Chase step will snap (instantly switch) from step to step. If you require a "smoother" fade from step to step, then adjust the crossfade rate by rotating the **[crossfade]** rotary fader.

To adjust the audio level turn the Audio Level control until the LED is flashing in sync with the music source. If the LED is continuously lit then the audio level is too loud, turn down the rotary fader until the LED flashes regularly.

9.5   EXTERNAL TRIGGER INPUT

The rear panel has a ¼" mono jack (EXT TRIG) for connecting **contact closure** type devices (such as a footswitch) to remotely advance the steps of a Chase.

Note: The switching device must NOT output any voltage otherwise the MINIM console will be damaged.

To activate the External Trigger Input to a Chase:
Press and hold **[MEMORY]** button until EDIT LED is lit.
Select the Chase to edit, press **[F/A]** (Chase number). hold **[function]** tap **[F/A]** (extern).
Tapping **[F/A]** (extern) will toggle the external on or off.

Exit EDIT by pressing and hold **[MEMORY]** button until RUN LED is lit.

The Chase is now controlled by the External Trigger Input. Fade up the Red Playback containing the Chase and also the Red Preset Master. If the CROSSFADE rotary fader is set at 0 (zero), each Chase step will snap (instantly switch) from step to step. If you require a "smoother" fade from step to step, then adjust the crossfade rate by rotating the **[crossfade]** rotary fader.

Note: While a Chase with an Audio Input or External Trigger Input is running, it is still possible to concurrently run other stored Scenes and Chases on the Red Playbacks and Grab Master.

10.0   COMPLIANCE STATEMENTS

10.1 CE & C TICK COMPLIANCE STATEMENT

The **MINIM** range of lighting control desks from LSC Lighting Systems (Aust) Pty. Ltd. have been designed and tested to the European Committee for Electrotechnical Standardization (CENELEC) standard– EN55022 (Information Technology Equipment).

All LSC products with CE Compliance automatically comply with C-Tick requirements as per Section 182 of the Radiocommunications Act 1992. LSC Company Registration number is N921.

10.2 DISCLAIMER

LSC Lighting Systems (Aust) Pty. Ltd. has a corporate policy of continuous improvement, covering areas such as product design and documentation. In light of this policy, some detail contained in this manual may not match the exact operation of your product.

In any event, LSC Lighting Systems (Aust) Pty. Ltd. cannot be held liable for any direct, indirect, special, incidental, or consequential damages or loss whatsoever (including, without limitation, damages for loss of profits, business interruption, or other pecuniary loss) arising out the use or the inability to use this product for its intended purpose as expressed by the manufacturer and in conjunction with this operating manual.

Servicing of this product is recommended to be carried out by LSC Lighting Systems (Aust) Pty. Ltd. or its authorised service agents. No liability will be accepted whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel. In addition servicing by unauthorised personnel may void your warranty.