

e24V3

TOURING DIMMING & DISTRIBUTION SYSTEM OPERATOR MANUAL



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1 e24V3 QUICK REFERENCE

The **control source** for each **e24V3** dimmer channel can be *individually configured* to be controlled by either:

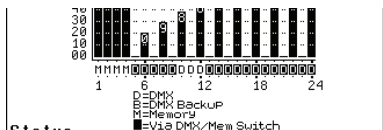
A. DMX (wired or optional wireless) from a DMX lighting controller. If DMX is lost, a “Backup Memory” can be automatically recalled.

B. Memories stored in the **e24V3** are recalled by ePlates (wall plate controllers).

C. DMX/MEM Switch. All channels that are configured to “switch” can be switched between *DMX* or *Memory* control from either a suitably programmed ePlate button or from the **e24V3** touch screen. If “**Auto Switch**” is ON, channels set to “switch” will be *automatically* switched to *DMX* whenever a valid DMX signal is connected.

D. Touch Screen. Dimmer channels can also be manually controlled from the **e24V3** front panel touch screen for testing purposes.

The row of characters below the level bar graph on the main **e24V3** screen shows the current **control source** for each dimmer channel as described by the legend on the screen.



In this example, channels 1 to 4 are all controlled by Memories, channels 5 to 24 are all controlled by DMX but 5 to 9 and 13 to 24 are via the DMX/Mem Switch and can therefore be switched to Memory.

1.1 DMX Control

When a dimmer channel is set to “**DMX Control**” it is **always** controlled by the DMX signal from a lighting console or other DMX device and it responds to the DMX slot number to which it has been patched in the **e24V3** patch menu.

To set a dimmer channel to “DMX control”, on the LCD touch screen press;

[Menu] [Dimmer Channels] [Setup].

The screen shows the “Control Source” for each dimmer channel.

To change the “Control Source” of a dimmer channel(s), **highlight** the required dimmer channel(s) by touching them, then press; [Control Source].

The three choices for dimmer channel control source are;



Press [DMX Control].

Press; [Save Setup] [Done] [Done].

1.2 DMX Patching

To **Patch** an **e24V3** dimmer channel to a DMX slot press;

[Menu] [DMX Input] [Patch]

The “**1 to 1 patch**” provides a rapid method of patching all of the dimmers in one **e24V3** frame to sequential DMX slots, starting from a DMX slot that you select.

Press [1:1 Patch] then type in the DMX start slot number (0 to 512) for dimmer channel 1 in this **e24V3** frame, then press;

[Patch Series] [Save Patch] [Done] [Done].

The “**User Patch**” allows you to *individually* patch each **e24V3** dimmer channel to a DMX slot of your choice. Press [User Patch].

To select a channel, press that **channel number** then press [Patch].

Type in the DMX slot number (0 to 512) for the selected channel then press [Patch @ Slot].

When all patches have been made, press;

[Done] [Save Patch] [Done] [Done].

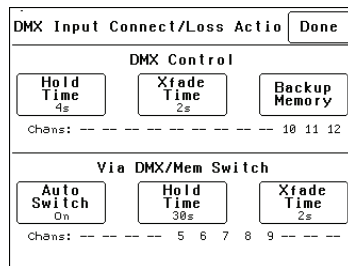
1.3 DMX Backup Memory

To create or edit the DMX “Backup Memory”, (automatically recalled if DMX is lost) press:

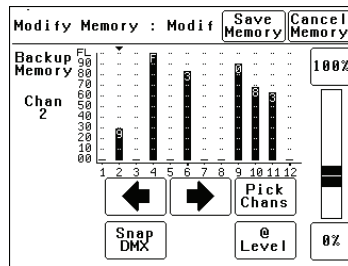
[Menu] [DMX Input] [Connect Loss Action]

Set the [Hold Time] to any time other than “Infinite” then press [Set].

To *replace the current e24V3 output* with the Backup Memory press; [Backup Memory].



The Backup memory screen appears;



You can either create your own memory using the controls on the screen or press [Snap DMX] to take a copy of the current DMX input signal.

When a channel(s) is selected (indicated by a small triangle (▼) above the channel) it can be faded up or down by sliding your finger over the virtual fader or instantly set to off or full using the [0%] or [100%] buttons.

When the channel levels are correct, press;

[Save Memory].

Normal output is restored.

1.4 Memory Control

When a dimmer channel is set to “Memory”, it is always controlled by the **e24V3** memories created via the LCD touch screen or by taking “snapshots” of a DMX input signal or a combination of both. The memories are saved in the **e24V3** and are recalled using the buttons or faders on ePlates.

To set a dimmer channel to “Memory”, press; **[Menu] [Dimmer Channels] [Setup]**.

The screen shows the “Control Source” for each dimmer channel.

To change the “Control Source” of a dimmer channel(s), **highlight** the required dimmer channel(s) by touching them, then press; **[Control Source]**. The three choices for dimmer channel control source are;



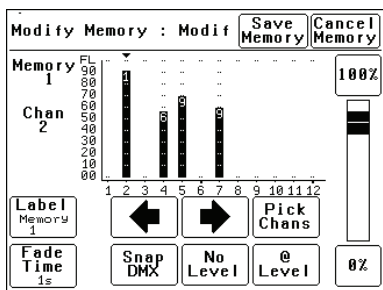
Press **[Memory Control] [Save Setup] [Done] [Done]**.

1.5 Create or Edit memories

To Create or edit a memory press; **[Menu] [Memories] [Record Memory]** or **[Edit Memory]**. Select a memory number then press **[Pick]**.

You can either create your own memory using the controls on the screen or press **[Snap DMX]** to take a copy of the current DMX input signal.

When a channel(s) is selected (indicated by a small triangle (▼) above the channel) it can be faded up or down by sliding your finger over the virtual fader or instantly set to off or full using the **[0%]** or **[100%]** buttons.



When the channel levels of the memory are correct, press;

[Save Memory] [Done].

To recall a memory, use a ePlate button or fader that has been programmed to control that memory.

1.6 SWITCH Control

All channels set to “DMX/MEM SWITCH” can be switched between **Memory** or **DMX** control.

The “switch” can be operated from either the **LCD touch screen** or from a suitably programmed **ePlate**.

To set a dimmer channel to “SWITCH” control, press; **[Menu] [Dimmer Channels] [Setup]**.

The screen shows the “Control Source” for each dimmer channel.

To change the “Control Source” of a dimmer channel(s), **highlight** the required dimmer channel(s) by touching them, then press; **[Control Source]**.

The three choices for dimmer channel control source are;



Press **[DMX/MEM Switch]**.

Press; **[Save Setup] [Done] [Done]**.

To operate the switch use either a suitably programmed ePlate button or from the LCD touch screen press;

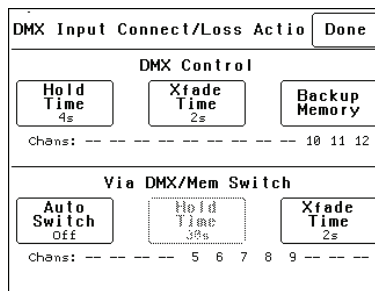
[Menu], [Net Setup] [DMX/MEM Switch]

Select either; **[DMX]** or **[Memory]** then press **[Set]**

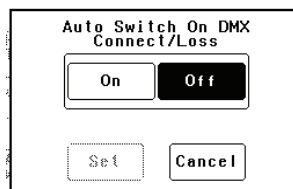
1.7 AUTO Switch

To configure the “Switch” (above) to **automatically** switch to DMX whenever a valid DMX signal is connected to the **e24V3** press;

[Menu] [DMX Input] [Connect Loss Action].



Press; **[Auto Switch]**



Press; **[On] [Set] [Done] [Done] [Done]**.

1.8 TOUCH SCREEN Control

e24V3 dimmer channels can also be controlled from the **e24V3**'s front panel **LCD touch screen**.

This method of control is primarily used for testing dimmer circuits.

To test a dimmer channel(s) press;

[Menu] [Dimmer Channels] [Chan Test]. Select a channel(s) then fade the channel(s) up or down with the virtual fader on the LCD screen or instantly set them to off or full using the **[0%]** or **[100%]** buttons

Channel test only allows one level to be set for all selected channels. To set individual channels levels use the “**DMX Backup Memory**” above.

2 PRODUCT DESCRIPTION

2.1 About this Manual

This manual describes the configuration and operation of the **e24V3V3** Dimming, Distribution and Patching System and associated “ePlate” wall controllers manufactured by LSC Lighting Systems.



2.2 e24V3

Features

The **e24V3** provides 24 channels of **dimming** and **Hot-power** at 3,000 watts per channel (13Amps @ 230VAC).

Dimmer outputs or Hot power can be patched to 48, 60 or 64 output circuits (depending on optional output configurations) with a wide selection of possible patch arrangements to suit most applications.

The **e24V3** can be controlled via;

- **DMX 512** from a lighting console connected by cable or optionally by inbuilt **wireless** DMX.
- **ePlate** wall controllers connected via LSCnet
- Front panel **LCD Touch Screen**.

The **e24V3** has an **inbuilt DMX splitter** providing 5 fully isolated DMX outputs, full 512 channel DMX **softpatch**, 80 internal **memories** (recalled by ePlates), 8 dimmer **curves** plus local and **remote** status monitoring.

The **e24V3** uses LSC’s Pulse Transformer Fired Dimmer (PTFD™) output circuitry which means that virtually any load can be controlled perfectly. Pin-spots, ELV lamps, transformers, strobes and even a 5w pilot lamp can all be connected without the need for dummy loads. PTFD™ ensures perfect flicker free dimming even when running on bad power, including generators.

The dimmers are designed for 100% duty cycle operation across all channels simultaneously. The **e24V3** features variable speed fan cooling to minimise noise. The fan only operates when required.

When something goes wrong at a show you want to know where to look. So the **e24V3** has a large 10mm Bi-Colour LED on the front panel for status indication. Solid GREEN means all is

well. Flashing RED gets your attention to tell you that something is wrong.

Houston is an optional Windows PC application that allows the remote monitoring of all LSCnet enabled products. This includes the **e24V3** dimmers and ePlate wall controllers. Any operational faults such as input phase failure, loss of DMX, over temperature etc are all sent over the LSCnet from all of the devices to a PC running the Houston software. The user is immediately notified of a fault when the normally GREEN status indicator starts flashing RED. Houston also keeps a permanent log of all system events for later viewing. These are stored with the time and date of the fault, allowing further diagnosis of a problem, even if it is not reported until weeks later.

2.3 LCD Touch Screen.

Dimmer configuration, DMX patching and local control is achieved via a backlit **touch screen** graphical LCD on the front panel. A lock code can be used to prevent unauthorised tampering.

2.4 Flight Case

The sturdy flight case has been designed to allow the **e24V3 Dimming Systems** to be stacked on top of each other or sit side by side. For ease of transportation, wheels are located on the front lid with a wooden skid base on the bottom of the flight case. Having the wheels located on the front lid gives the added bonus of allowing the operator to patch the outputs while the Dimming System is still on its wheels. This is great for the operator saving strain on their back and legs instead of trying to patch when the **e24V3** is upright and down low.

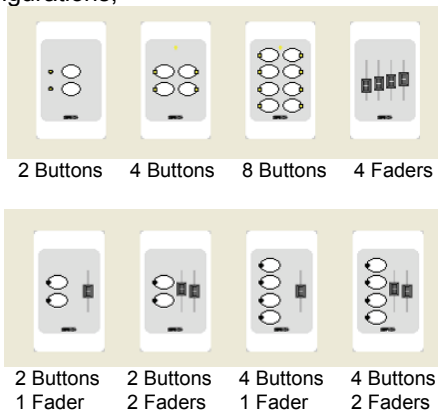


The front and rear lids can also be locked together to provide a “dolly” for the dimmer.

2.5 ePlates

The inclusion of LSCnet also allows AV companies to use the e24V3 as a stand alone dimmer for small shows. Simply connect any DMX console, set up a look and use the DMX snapshot function to record up to 80 memories. Then remove the lighting console and replace it with elegant push button and/or ePlates™ remote wall station controllers. They allow users to recall internal memories (80) from the e24V3 for replay at a pre-programmed level and with a selected fade time. If no lighting console is available you can also create memories using the inbuilt touch screen.

ePlates are available in the following configurations;



2.6 Patch Outputs

The 24 channels of Dimming and Hot-power are divided into two banks of 12, with each bank protected by its own RCD (Residual Current Device). The 24 channels have individual 13 Amp MCB’s (Miniature Circuit Breakers) to protect the circuits from overload. The output of each of the 24 MCB’s is available on the rear patch as both a dimmer channel output and a Hot-power output.

Note: Some export models are not fitted with a patch. See “Input, Patch & Output Options” for details.

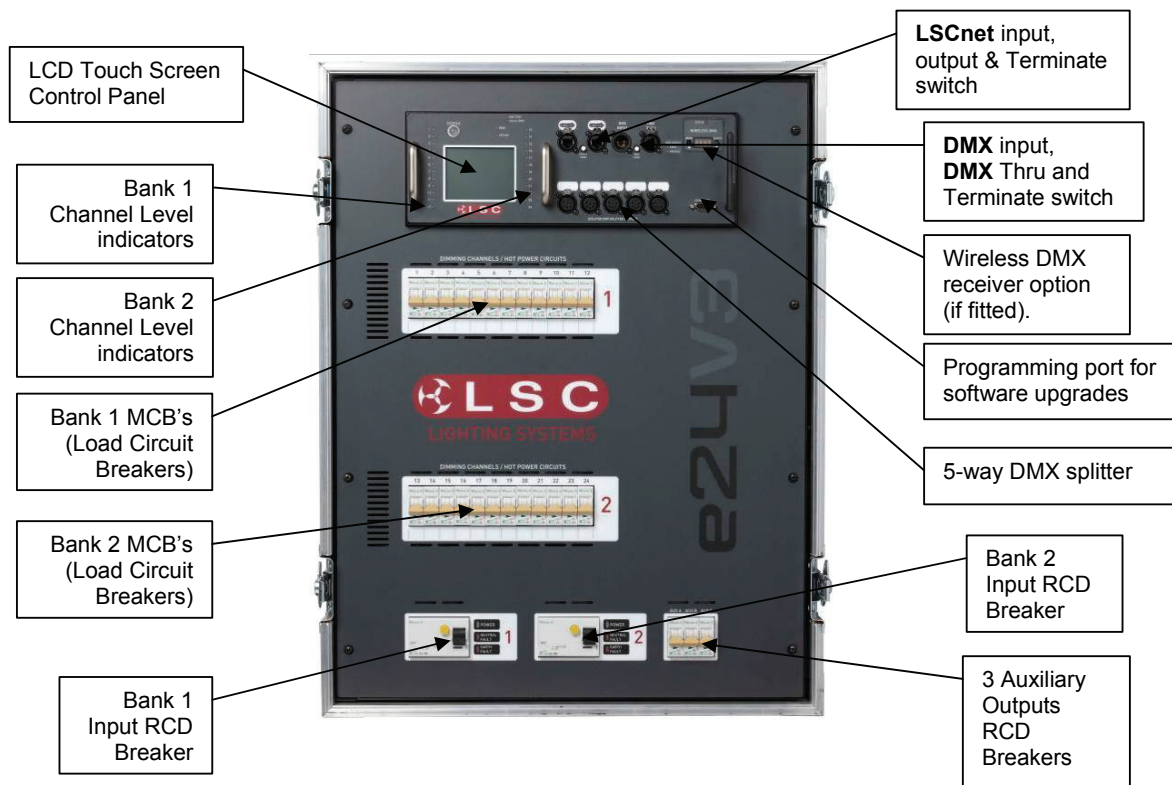
2.6.1 Fully Approved.

The e24V3 dimmers are CE and C Tick approved.

3 e24V3 QUICK TOUR

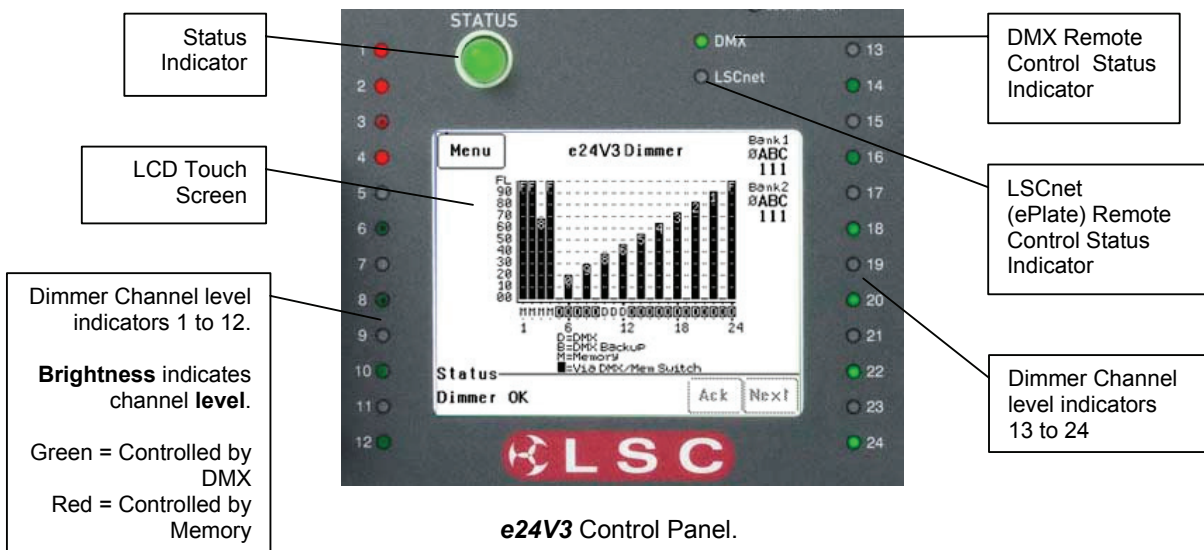
3.1 Front Panel

The front panel contains the Input circuit breakers, load MCB (Miniature Circuit Breakers), control panel that includes the status indicators and LCD touch screen and the DMX and LSCnet connectors and terminate switches plus the 5 DMX splitter outputs and optional wireless DMX.



3.1.1 Control Panel

The Control Panel contains the indicators for status and channel levels and the LCD touch screen.



3.1.2 Indicators

The indicators located around the touch screen are multi coloured and light or flash to indicate their current condition as described below;

STATUS

- **Green** = Normal operation.
- **Red (flashing)** = Alarm. See status message on LCD screen.
- **Red (steady)** = Alarm is acknowledged but the problem still exists.

DMX

- **Green** = Valid DMX control signal.
- **Green (flashing)** = Loss of DMX signal.
- **Red (flashing)** = Error on DMX signal.

LSCnet

- **Green** = Valid LSCnet control signal connected (from ePlates).
- **Green (flashing)** = Data traffic detected on LSCnet.

CHANNEL LEVEL indicators

- **Green** = The channel is ON via **DMX** control.
- **Red** = The channel is ON via **memory** (ePlate) or channel test control.

The brightness of the channel indicator is proportional to the channel level.

See the, "Maintenance and Alarms" section for further details on alarms.

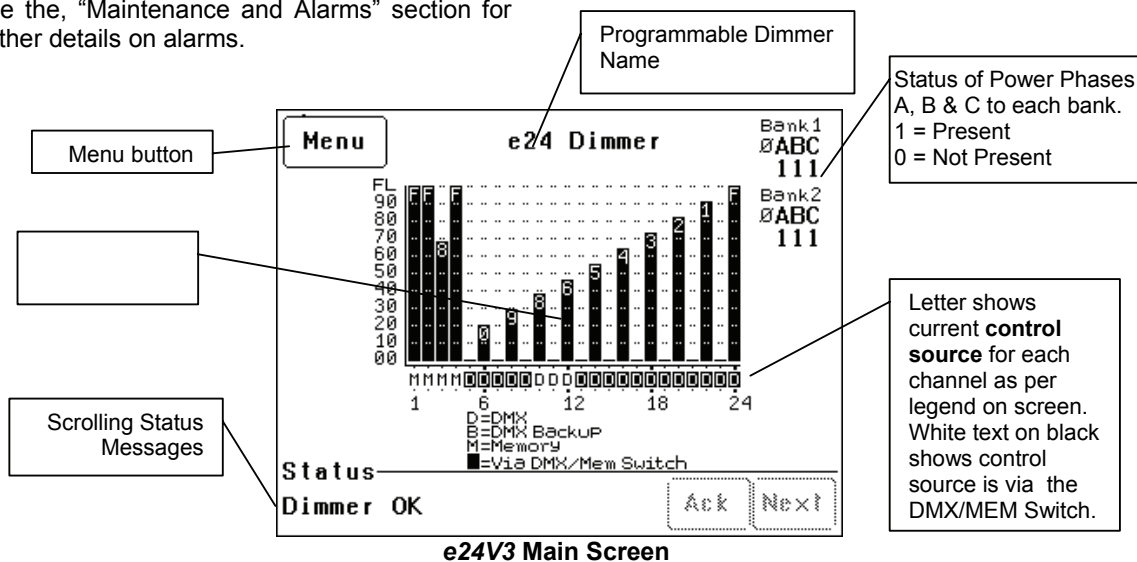
3.1.3 Touch Screen

The touch screen may be operated by touching the virtual buttons with your finger. The home page of the touch screen shows the current level of each dimmer channel in a bar graph display.

If the **e24V3** has been "locked", the **[Menu]** button is replaced by the **[Unlock]** button. Touching the **[Unlock]** button and entering your code number unlocks the **e24V3** and reveals the **[Menu]** button.

Pressing **[Menu]** allows you to access a range of functions, setups and tests via sub-menus. Each sub-menu screen has help information in the top left corner. The menus are fully described in Section 6 "**Menu System**".

At the top of the screen is the **name** of this **e24** dimmer. The default name is "e24 Dimmer" but you can enter a name of your choice from the options menu. Names are useful in identifying each **e24** dimmer in installations containing more than one **e24** and can also be used by the "Houston" monitoring software.



The middle of the screen is a bar-graph display of the channel levels with channels numbers 1 to 24 shown across the bottom. The levels from 00 to FL (Full) are shown on the left scale in increments of ten, whilst the units of each channel are shown on the individual channel bars. In the example above, channel 3 has a level of 68.

3.2 e24V3 Control Philosophy

The **control source** for each **e24V3** dimmer channel can be *individually configured* to control that channel from either **DMX**, **Memory** or **Switch** (DMX/Mem Switch).

3.2.1 DMX.

When configured for "DMX" a dimmer channel is controlled from a DMX lighting controller. If DMX fails, the DMX levels can be held indefinitely or the channels can fade to a "**DMX Backup**" memory previously stored in the **e24V3**. If the

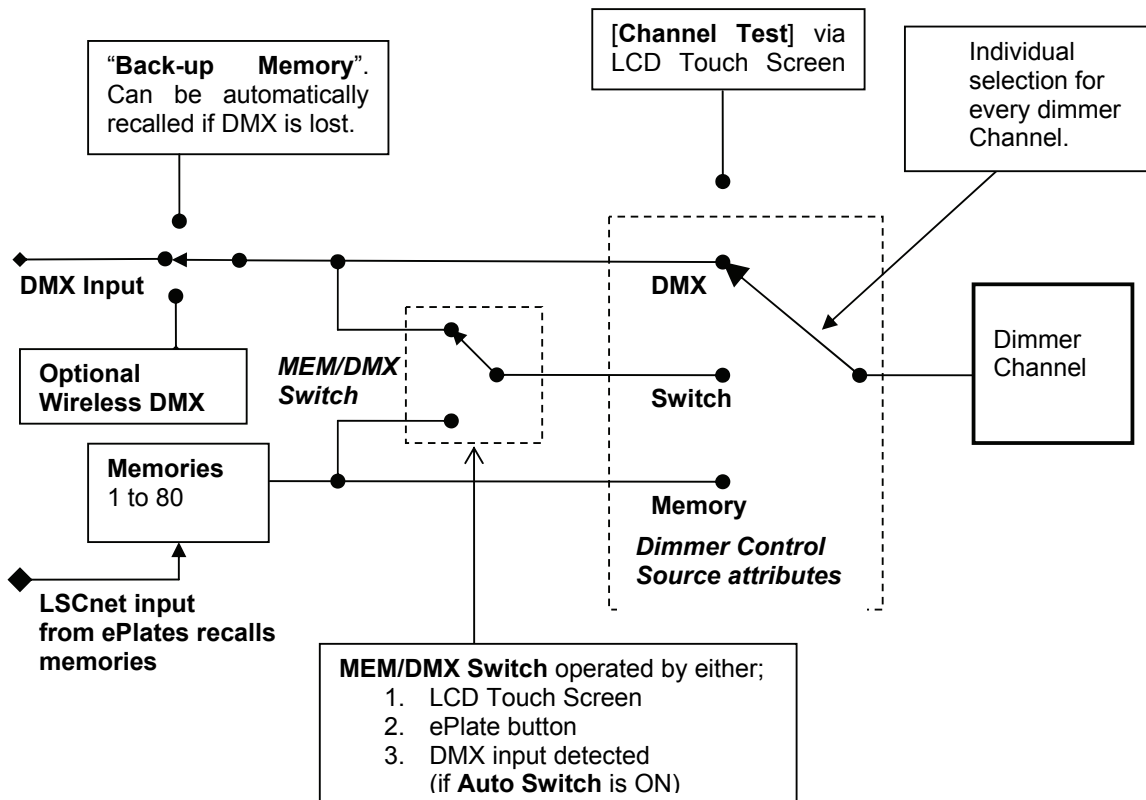
optional wireless DMX is fitted, it will automatically take control if the wired DMX is lost.

3.2.2 Memory.

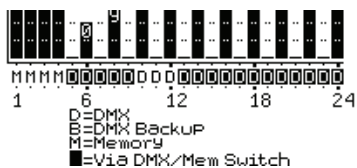
When configured for “memory” a dimmer channel is controlled from ePlates (wall plates) that are used to recall memories stored in the e24V3 dimmer.

3.2.3 Switch.

When configured to “Switch”, a dimmer channel can be switched between *Memory* or *DMX*. Operation of the **Switch** is controlled from either a suitably programmed ePlate button or from the e24V3 touch screen or if **Auto Switch** is set to **ON** it will be *automatically* switched to *DMX* whenever a valid DMX signal is connected to the e24V3.



e24V3 Dimmer Channel Control Options



The letters below the bargraphs show the control source for each channel. The legend below the channel numbers explains the meaning of the letters.

In the example above;

- Channels 1 to 4 are controlled by **M** (Memories recalled by ePlates).
- Channels 10 to 12 are controlled by **D** (DMX).
- Channels 5 to 9 and 13 to 24 are also controlled by **D** (DMX) but have white letters on a black background meaning that their control is via the **MEM/DMX switch**. If the switch was changed from DMX to Memory, then channels 5 to 9 and 13 to 24 would change to **Memory** control. If the switch has

been set to “**Auto Switch**” (to DMX if a DMX signal is present), then if the DMX signal is lost, channels 5 to 9 and 13 to 24 would automatically switch to **Memory** control. See section 6 “Menus” for details.

```
Bank1
∅ABC
111
Bank2
∅ABC
111
```

The right hand side of the screen indicates the presence of the 3 phases (∅ A B C) of input power to the two “Banks” of Dimmers and Hot-power inside the e24V3.

“1” indicates the presence of that phase
“∅” indicates a loss of that phase.

The bottom of the screen displays scrolling messages about the status of the e24V3 dimmer. These are described in the “Maintenance and Alarms” section.

3.3 Wireless DMX

The wireless DMX module can work as the sole DMX input source for the **e24V3** or as a back-up source for the cable DMX input. If **both** cable and wireless DMX are available, the **e24V3** will automatically use the cable DMX.



The DMX SOURCE indicators show the current DMX status.

Cable LED

- Green = Cable DMX Data in use.

Wireless LED

- Green = Wireless DMX Data in use.
- Orange = Wireless DMX Data available but not in use.

Two different types of wireless DMX are available. See section 9, “**Wireless DMX Option**” for details.

3.3.1 DMX Splitter

The **e24V3** has an **inbuilt DMX splitter** providing a loop THRU output and 5 DMX outputs.



The 5 DMX outputs are individually isolated from each other as well as from the input. Isolation is for both data and common and provides a galvanic barrier to 1500 Volts. Outputs are EMI filtered and current limited to protect against short circuits. Space is provided above each output to write a label.

The DMX signal from the splitter outputs will be the same as is currently controlling the **e24V3** dimmer channels.

- If cable DMX is available, the splitter will output cable DMX.
- If only wireless DMX is available, the splitter will output wireless DMX.
- If BOTH cable and wireless DMX are available, the splitter will output cable DMX.

If the “DMX THRU” connector is not used, then the “DMX TERM” button must be pressed IN to terminate the DMX line. The **DMX TERM** indicator above the touch screen will light when the DMX is terminated.



3.3.2 LSCnet Connectors

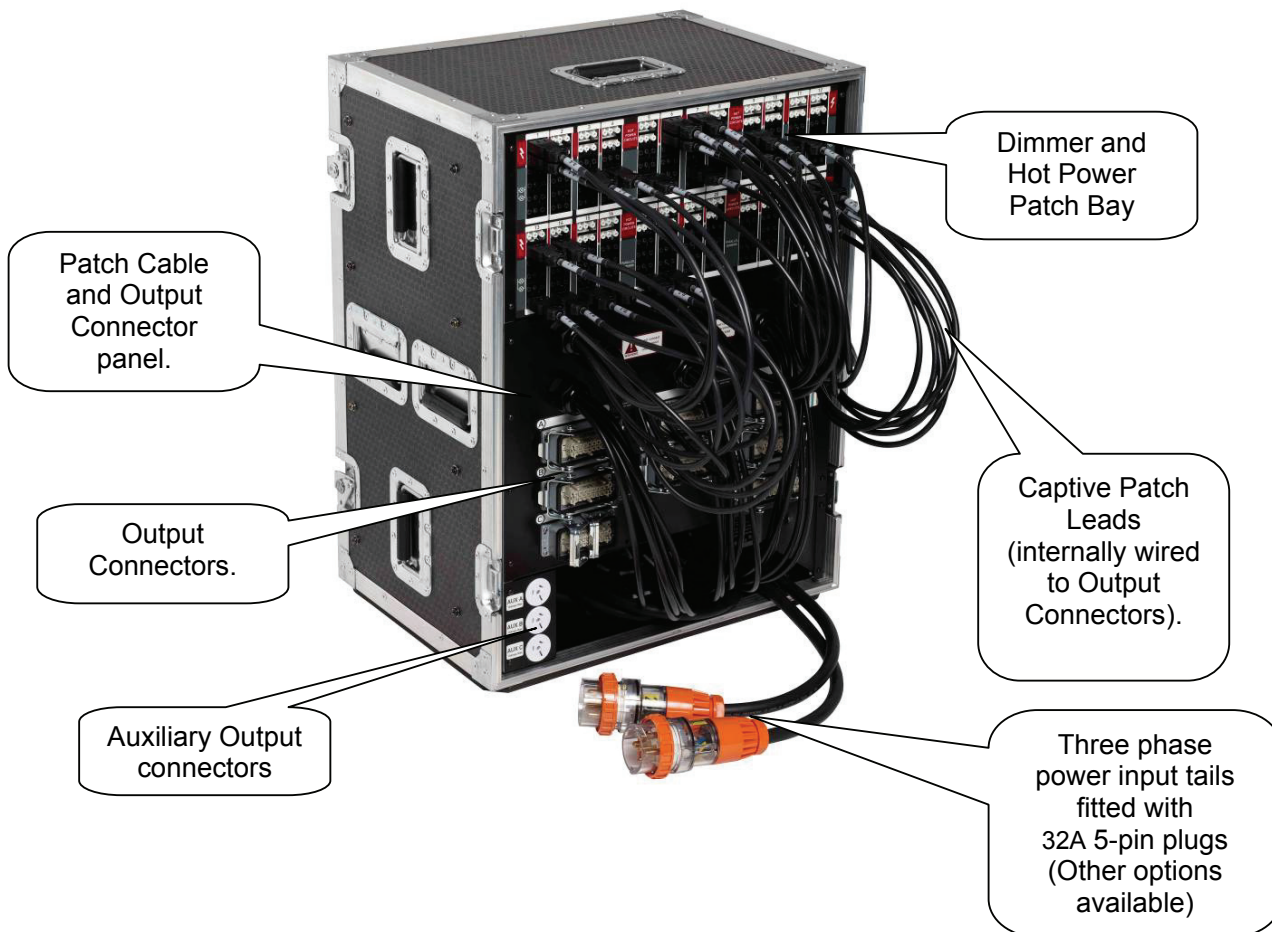
LSCnet is LSC’s proprietary (TCP/IP) networking protocol using industry standard Cat5 cables and connectors.



It is used to connect ePlates to control the **e24V3** and also for remote monitoring using an optional Windows PC application called Houston.

If only one of the LSCnet connectors is used, then the “LSCnet TERM” button must be pressed IN to terminate the line. The **LSCnet TERM** indicator above the touch screen will light when the network is terminated.

3.4 Rear Panel



e24V3 Australian model Rear View

The e24V3 is available in many configurations of input, patch bay and output connections.

3.5 Input Power

Australian models have 3 options for input power;

- Two 2m cables, each fitted with a Clipsal style 32A 5-pin three phase plug.
- Two 2m cables, each fitted with a Clipsal style 40A 5-pin three phase plug.
- One set of 5 x 400A Powerlocks.

Export (non Australian) models have 3 options for input power;

- One 63A 5 pin CEEform connector.
- One 125A 5 pin CEEform connector.
- One set of 5 x 400A Powerlocks.



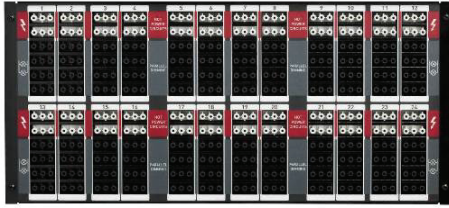
Export model CEEform input connector

3.6 Patch Bay Options

Note: The e24V3 also has a **DMX Softpatch** allowing any of the 24 dimmer channels to be patched to any DMX slot number. See section 6.3.1 Patching.

Australian models use GST18 patch bay connectors. The channel outputs are available in two optional configurations:

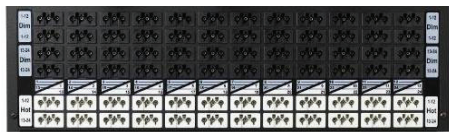
- Two parallel (230 Volts) dimmer outputs and a dimmer output wired in series to two connectors (allowing two 115 Volt loads to be connected in series across 230 volts) plus two Hot-power outputs per channel.
- Four parallel dimmer outputs plus two Hot-power outputs per channel.



GST18 Patch bay with 4 parallel dimmer outputs plus 2 Hot-power outputs per channel

Export models can be supplied with or without output patching. Export models with a **patch** bay have two optional types of dimmer patch connector.

- ST18 connector patch bays provide two parallel dimmer outputs plus one Hot-power per channel.
- GST18 connector patch bays provide four parallel dimmer outputs plus two Hot-power outputs per channel.



ST18 Patch bay with 2 parallel dimmer outputs plus 1 Hot-power output per channel

Note: *LSC Lighting System accepts no responsibility for damage that may occur to the connector, the dimmer or the load if the patch connectors are disconnected whilst under load.*

3.7 Output Options

If you need to connect to different types of load connectors, you can order multiple types of output connector panels. The patch-cable/output connector panel can be easily changed to a different output connector type in less than 5 minutes.

The patch leads are hard-wired to the output connectors and pass through the rear panel arranged in the connector groups. This allows quick identification of patch leads to output connectors whilst patching.

Labelling of the output connectors is via alpha characters. These letters appear next to each connector and can be easily seen even when mating connectors are fitted.

The patch leads are also labelled in accordance with the output connector letter and the circuit number for the connector.



For example, the patch lead for circuit for 4 on connector F will be labelled “F4”.

Australian models have the following patch cable to output connector wiring options;

- **48 GST18 patch cables** wired to eight 19 pin **Socapex** connectors (6 circuits each) providing **48 outputs**.
- **48 GST18 patch cables** wired to twelve 10 pole **Harting** connectors (4 circuits each) providing **48 outputs**.
- **60 GST18 patch cables** wired to twelve 10 pole **Harting** connectors (5 circuits each) providing **60 outputs**.
- **48 GST18 patch cables** wired to eight 16 pole **Harting** connectors (6 circuits each) providing **48 outputs**.



48 patch cables wired to eight 19 pin Socapex connectors labelled A thru H (6 circuits each) providing 48 outputs

Export **Patch** models have the following patch cable to output connector wiring options;

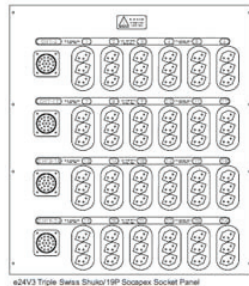
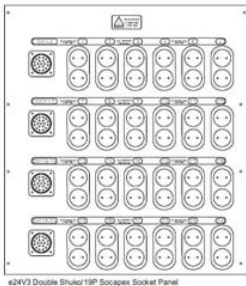
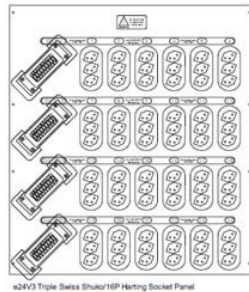
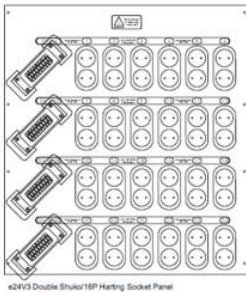
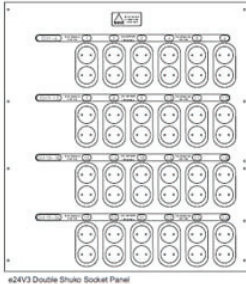
- **48 GST18 (or ST18) patch cables** wired to eight 19 pin **Socapex** connectors (6 circuits each) providing **48 outputs**.
- **48 GST18 (or ST18) patch cables** wired to eight 16 pole **Harting** connectors (6 circuits each) providing **48 outputs**.
- **64 GST18 (or ST18) patch cables** wired to eight 16 pole **Harting** connectors (8 circuits each) providing **64 outputs**.



48 patch cables wired to eight 16 pole Harting connectors (6 circuits each) providing 48 outputs.

Export **Non-Patch** Models have rear mount connector panel with hard-wired output connectors.

- 24 Double Shuko output connectors.
- 24 Double Shuko output connectors with four 16-pole Harting connectors wired in parallel.
- 24 Double Shuko output connectors with four 19-pin Socapex connectors wired in parallel.
- 24 Triple Swiss output connectors with four 16-pole Harting connectors wired in parallel.
- 24 Triple Swiss output connectors with four 19-pin Socapex connectors wired in parallel.



Non-Patch Output Connector options

3.8 Auxiliary Power Outlets

In addition to the 24 channels, all models are fitted with 3 single phase auxiliary outputs, each protected by its own Residual Current Device (RCD).

Australian models have three 13 Amp Auxiliary power circuits with Australian 3 pin sockets. On Australian models fitted with **two 3 phase input connectors**, supply to these three auxiliaries comes from the second bank input connector.



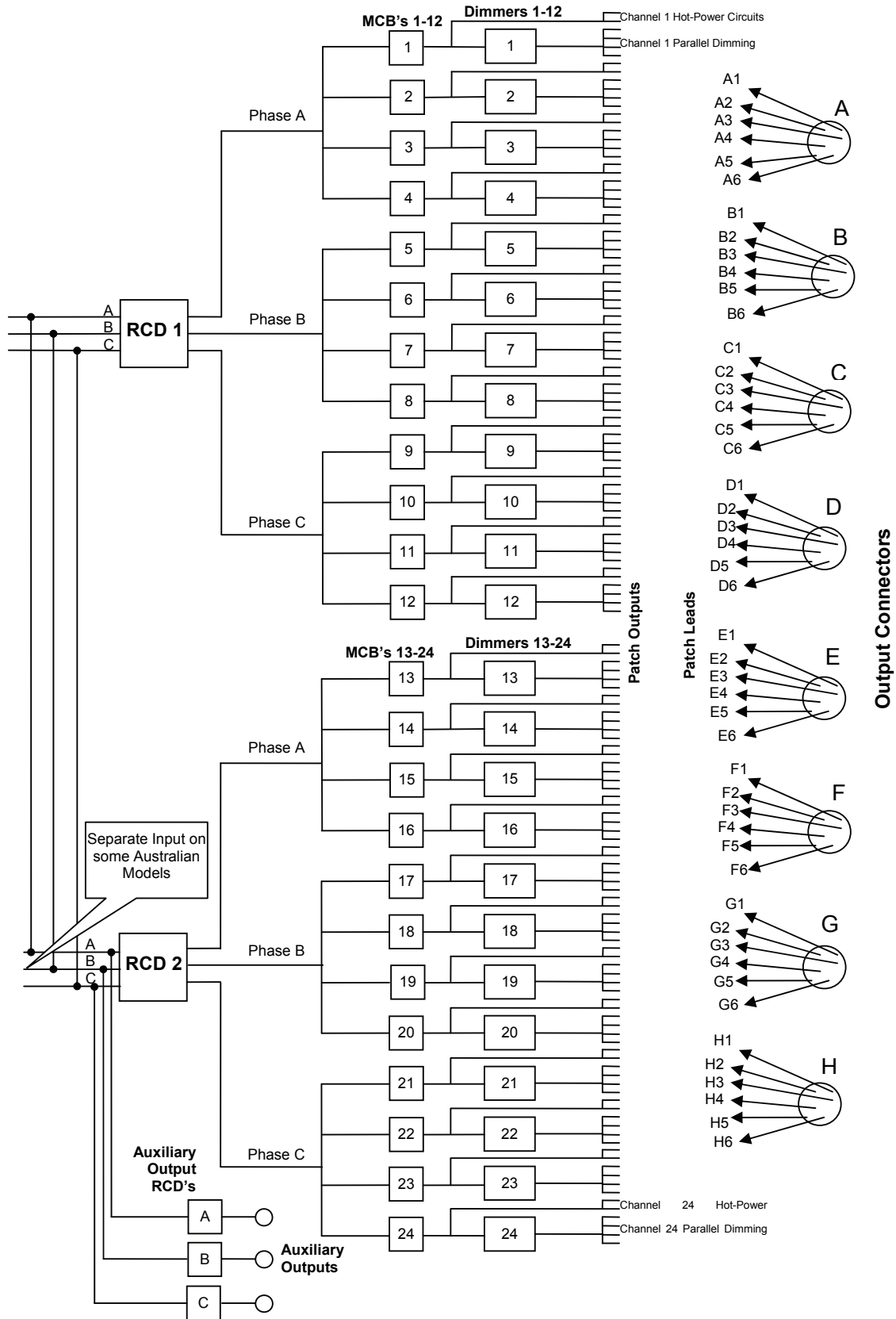
Export **“patch”** models fitted with **ST 18** connectors have 3 Auxiliary power circuits each with one 16A CEEform connector **and** two ST18 sockets.



Export **“patch”** models fitted with **GST 18** connectors have 3 Auxiliary power circuits each with one 16A CEEform connector.

Export **“non-patch”** models fitted with Shuko connectors have 3 Double Shuko auxiliary power outlets.

Export **“non-patch”** models fitted with Triple Swiss connectors have 3 Double Triple Swiss auxiliary power outlets.



E24V3 Power Flow Block Diagram

4 GETTING CONNECTED

4.1 Input Supply

Australian models have 3 options for input power;

- Two 2m cables, each fitted with a Clipsal style 32A 5-pin three phase plug.
- Two 2m cables, each fitted with a Clipsal style 40A 5-pin three phase plug.
- One set of 5 x 400A Powerlocks.

Export (non Australian) models have 3 options for input power;

- One 63A 5 pin CEEform connector.
- One 125A 5 pin CEEform connector.
- One set of 5 x 400A Powerlocks.

The incoming power is internally terminated to 2 three phase 63 Amp Residual Current Devices (RCD's). These devices are set to trip if the residual current reaches 30mA.

RCD's are also known as "Safety Switches", "Earth Leakage Breakers" or "Core Balance Units".

Three indicator LED's next to each RCD show;

- Green = power available.
- Red = bad neutral connection.
- Red = fault or bad earth connection.

Connection is Three Phase Star and frequency is automatically selected between 50Hz and 60Hz.

4.2 Control Input

The dimmers of the **e24V3** can be controlled by various sources:

- **DMX 512** from a lighting controller or console. The "**DMX Input**" connector is located on the front panel. A "**DMX Thru**" connector located next to the DMX Input allows the DMX signal to be connected to other DMX512 devices downstream. If the "DMX Thru" is not used, the DMX signal must be terminated by switching on the "DMX Terminate" switch. See **DMX Explained** for more details.
- **Wireless DMX** from the optional wireless DMX receiver. If both cable DMX and wireless DMX are being received, dimmer control will be by cable DMX.
- **ePlate wall controllers** connected via LSCnet can be used to recall any of the 80 memories saved in the **e24V3**. See **ePlates and LSCnet** for details.
- The front panel LCD Touch Screen. See **Section 6.2.2: Channel Test** for details

4.3 DMX Splitter

There are 5 isolated DMX outputs available from the DMX splitter.

The DMX signal from the splitter outputs will be the same as is currently controlling the **e24V3** dimmer channels.

- If cable DMX is available, the splitter will output cable DMX.
- If only wireless DMX is available, the splitter will output wireless DMX.
- If BOTH cable and wireless DMX are available, the splitter will output cable DMX.

4.4 Load Connection

The **e24V3** offers a wide selection of output load connectors to suit many applications and markets. See the previous section for details on the output connector options.

Use the captive patch leads to "patch" your load circuits to the required channels dimmer or HOT-Power.

The maximum load of **Dimming** and **Hot-power** on each of the 24 channels is 3,000 watts (13Amps @ 230VAC).

4.5 Overload Protection

The **e24V3** is fitted with twenty four fast acting Miniature Circuit Breakers (MCB's), one for every output channel. Under normal operating conditions the MCB's pass the rated current and will only trip when there is an overload through the channel.

The MCB's are located on the front panel of the dimmer allowing quick visual access to which channel has a fault or overload condition. Channels can be manually disabled by switching off the MCB for that particular channel.

The auxiliary single phase outputs are protected by three RCD's also located on the front panel.

5 CONFIGURING THE E24V3 DIMMER

The **e24V3** dimmer may need to be configured to suit its particular application. This involves the following operations which are achieved via the touch screen menus.

The menu system is fully described in section 6.

5.1 Dimmer Control Source

Each dimmer channel needs to be configured for the “**Control Source**” that will drive it. This could be either **DMX**, **Memory** or **SWITCH** (switchable between Memory or DMX).

See section **6.2.1.1 Control Source**.

The **SWITCH** (above) can be *manually* operated either locally from the LCD touch screen or remotely from an ePlate.

See section **6.5.1 DMX/MEM Switch Operation** and section **6.5.2 Switch Group**.

The **SWITCH** can be *automatically* operated by the presence or absence of DMX.

See section **6.3.6.2 DMX/MEM Switch Connect Loss Action**.

Note: If “*Control Source*” is not available on the menu then “*Net Playback*” has been disabled from the “*Options*” menu. When “*Net Playback*” is disabled, it forces all dimmer channels to DMX control.

5.2 Patching

Dimmer channels set to **DMX** or **Switch** Mode, may need to be patched to the DMX slot number that is to control them.

See section **6.3.1 Patching**

5.3 Recording Memories

Dimmer channels set to **Memory** Mode, are controlled by the memories (up to 80 memories) saved in each **e24V3**. These memories are created and saved in the **e24V3** either by using the LCD touch screen to create the memory or by taking a snapshot of the DMX input. The ePlates (wall plates) must also be programmed to recall the required memories.

See section **8 ePlates & LSC Net**

5.4 Optional Settings

In addition to the above settings you can also set the following *optional* parameters;

- Selecting the dimmer action of DMX controlled channels when the DMX signal is connected or lost including the saving of a **Backup Memory**.
See section **6.3.6 Connect Loss Action**
- Selecting minimum and maximum levels for each dimmer.
See section **6.2.1.2 Min and Max Levels**
- Selecting a fade curve for each dimmer.
See section **6.2.1.3 Fade Curve**
- Setting each dimmer to either Dim (dimmer) or Switch (between OFF or fully ON).
See section **6.2.1.3 Fade Curve**
- Setting a “lock code” to prevent unauthorised access to the **e24V3** menu.
See section **6.6.4 e24V3 Lock / Unlock**
- Naming the Dimmer. Useful in large installations to identify each **e24V3**.
See section **6.6.6 Name**
- Setting the date and time (for the **e24V3** status log).
See section **6.6.7 Time and Date**
- If the **e24V3** is **ONLY** to be controlled by **DMX** then the Memory control by ePlates via LSC net can be disabled. This simplifies the menu system and forces all dimmer channels to DMX control.
See section **6.6.8 Net Playback**
- The DMX alarm delay time can be set or the alarm can be disabled. Disabling the alarm is useful when the **e24V3** is never to be controlled by DMX.
See section **6.3.7 DMX Alarm**.

5.5 Testing

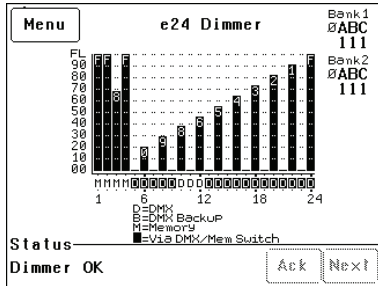
The operation of each dimmer circuit can be tested from the LCD touch screen.

See section **6.2.2 Channel Test**.

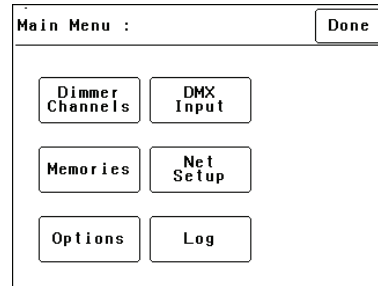
6 MENU SYSTEM

6.1 Touch Screen Menus

When the **e24V3** is switched ON, after briefly showing the opening screen, the main screen appears;



Pressing [**Menu**] reveals the “Main Menu”.



The six buttons on the “Main Menu” provide access to the Sub-Menus and functions which are described in detail on the following pages. Each sub menu has a description of its function at the top of its screen.

6.1.1 e24V3 Menu Structure

Each of the 6 main menu buttons accesses the following sub menu functions;

Dimmer Channels	
Set-up	Chan Test
Control Source. (DMX, Memory or Switch)	Manual channel(s) level test Channel test sequencer
Min Level	
Max Level	
Fade Curve	
Net Group Master.	

DMX Input	
Patch	View Levels
1:1 Patch	Raw levels
User Patch	Percentage
Clear Patch	
Connect Loss Action	DMX Alarm
DMX Control Hold Time Xfade Time Backup Memory	Alarm Enable/Disable Alarm Delay Time
Via DMX/MEM Switch Auto Switch On/Off Hold Time Xfade Time	

Memories		
Record Memory	Edit Memory	Copy Memory
		Delete Memory

Net Setup	
MEM/DMX Switch	Switch Group
Manually operate the “MEM/DMX Switch”.	Set Switch Group Number or None for ePlate control of MEM/DMX Switch.

Options		
Module Status	Beeper	About
Input Phases A B C	On or Off	Software Version
Temperature		Model type
Fan Speed		Voltage
Lock Dimmer	Change Lock Code	Dimmer Name
4 digit code to lock	Default = 0000	Enter a name
Date and Time	Net Playback	Reset
Set Time	Enable or Disable Memory playback from ePlates	System Reset
Set Date		Total Reset

Log
Displays Log
Clear Log

Select a menu by touching the appropriate button on the touch screen.

To step back through the menus, press the button in the top right of the screen.

The choices will be either;

[Done] (Exits to previous menu)

or, if changes have been made;

[Save] (Exits to previous menu and saves changes)

or

[Cancel] (Exits to previous menu and restores previous settings).

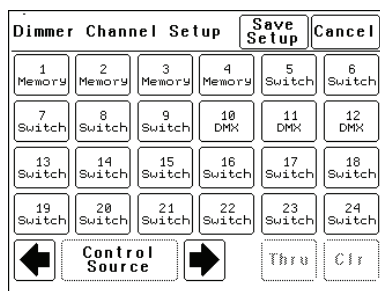
6.2 Dimmer Channels Menu

Selecting **[Menu]** **[Dimmer Channels]** provides menus for;

- Setup (of channel attributes)
- Channel Testing

6.2.1 Set-Up

Selecting **[Menu]** **[Dimmer Channels]** **[Setup]** reveals the following screen;



The ◀ and ▶ buttons at the bottom left of the screen step through the attributes that can be set for each individual dimmer channel.

The available attributes are;

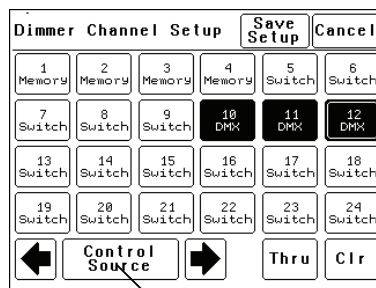
- Control Source
- Min Level
- Max Level
- Fade Curve
- Net Master Group

As each attribute is selected, the screen shows the setting of that attribute for every channel. In the example above, the “Control Source” attribute for every channel is shown.

- Channels 10 to 12 are controlled by **DMX**.
- Channels 1 to 4 are controlled by **e24V3 memories** (recalled from ePlates).
- Channels 5 to 9 can have their control “switched” between either DMX or Memory.

To change the selected attribute of a channel(s), select the channel(s) by touching them.

Selected channels have white text on a black background.



In this example, channels 10, 11 and 12 are selected.

To de-select a channel, touch that channel again.

To de-select **all** channels press **[Clr]**.

To select a range of channels, press a channel, then **[Thru]** then another channel.

When any channels are selected, the attribute button becomes active. Pressing the attribute button allows you to change the attribute of the selected channel(s) as described below.

The **default** settings for channel attributes are;

ATTRIBUTE	DEFAULT SETTING
Control Source	Switch
Min Level	0%
Max Level	100%
Fade Curve	S Law
Net Master Group	None

Descriptions of each attribute and how to set them are described below.

When the all attributes are correct for all channels press **[Save Setup]**, or to cancel the changes that you have made and return to the previous settings press **[Cancel]**.

6.2.1.1 CONTROL SOURCE

The “Control Source” attribute selects the signal that will control the level of a dimmer channel. Press; **[Menu]** **[Dimmer Channels]** **[Setup]**. The screen shows the control source for every channel. To change the control source, select a channel(s) (by touching them) then press **[Control Source]**. You can select the following sources;



1. DMX Control. When configured for “DMX Control” a dimmer channel is only controlled from the DMX signal from a lighting controller.

Note: If a dimmer channel is controlled by DMX, it might need to be patched. See 6.3.1 “Patching” for details.

2. Memory Control. When configured for “Memory Control” a dimmer channel is controlled from ePlates (wall plates) that are used to recall memories stored in the **e24V3** dimmer. These memories can be created and edited via the LCD touch screen.

3. DMX/MEM Switch. When configured to “Switch”, a dimmer channel can be manually or automatically switched between *DMX* or *Memory* control.

Manual operation of the “DMX/MEM Switch” is controlled either “remotely” from a suitably programmed button on an ePlate or “locally” from the **e24V3** touch screen. See section 6.5.1 “DMX/MEM Switch Operation” for details on how to manually operate the “DMX/MEM Switch” from the touch screen.

Automatic operation of the “Switch” is controlled by the presence or absence of a valid DMX signal from a DMX lighting controller. When DMX is present it will be automatically connected to any channels that are set to “Switch”.

See 6.3.6.2 “DMX/MEM Switch Connect Loss Action” for details on how to set the “DMX/MEM Switch” to “Auto Switch” to DMX.

When finished press **[Save Setup] [Done] [Done]**.

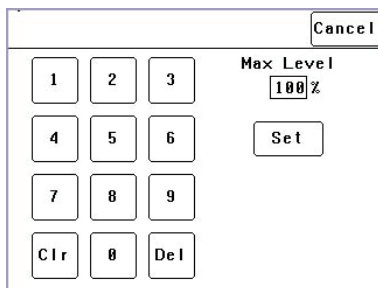
6.2.1.2 MIN AND MAX LEVEL

The “Min Level” attribute sets the level of the dimmer output when the control signal is set to minimum. Setting this value slightly above zero is useful to “Pre-Heat” lamp filaments.

“Max Level” sets the level of the dimmer output when its control signal is set to maximum.

Press; **[Menu] [Dimmer Channels] [Setup]** then use the ◀ and ▶ buttons to select “Min Level” or “Max Level”.

When you select a channel(s) (by touching it) then press **[Min Level]** or **[Max Level]**, you can use the keypad that appears to enter the required percentage level for the selected channels, then press **[Set]**.



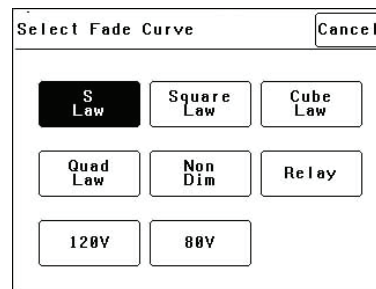
When finished press **[Save Setup] [Done] [Done]**.

6.2.1.3 FADE CURVE

Fade Curve is the curve or “transfer characteristic” between input control signal and dimmer output. The following curves are available;

- S Law
- Square Law
- Cube Law
- Quad Law
- Non Dim
- Relay
- 120V (Volt)
- 80V (Volt)

Press; **[Menu] [Dimmer Channels] [Setup]** then use the ◀ and ▶ buttons to select “Fade Curve”. When you select a channel(s) (by touching it) then press **[Fade Curve]**, you can select the required curve for the selected channel(s).



“S Law” is the default law and provides a normal dimmer response.

“Square”, “Cube” and “Quad” laws can be selected to better match the transfer characteristic of existing dimmer installations or to provide the response that you require. Try the different curves to find the best curve for your needs.

“Non Dim” is used for devices that do not fade, but need to be switched OFF or ON such as motors or discharge lamps. When set to “Non Dim”, when the control signal is raised above 60%, the dimmer will switch from OFF to full ON and when the level drops below 40%, the dimmer will switch OFF.

“Relay” is used for devices that need to be switched OFF or ON. It is similar to “Non Dim” but uses different thresholds for switching. When set to “Relay”, if the level is raised above 4%, the dimmer will switch to full ON and when the level drops below 2%, the dimmer will switch OFF.

Relay mode is particularly useful when long fade times are used as the “Relay” channel will switch

on at the *start* of the up fade and switch off at the *end* of the down fade.

“120V” limits the maximum output voltage of the selected channels to 120 Volts. Use this setting for 120Volts lamps.

“80V” limits the maximum output voltage of the selected channels to 80 Volts. Use this setting for 80Volts lamps.

When finished press [**Save Setup**] [**Done**] [**Done**].

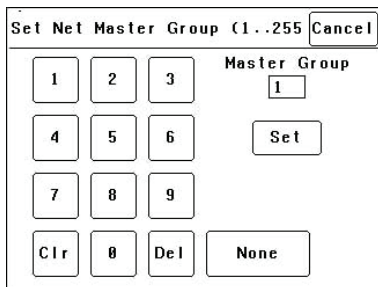
6.2.1.4 NET MASTER GROUP

ePlate fader panels can be programmed so that a fader acts as level “Group Master” over specified dimmer channels that are under memory control. Any dimmer channels that are assigned to a “Group Master” will still be controlled by the playback of memories, but the ePlate Group Master will have master level control.

For example, if a channel is played back from a memory with a level of 50% and its Group Master is set to 50% then the channels level will be 25%.

The [**Net Master Group**] attribute allows you to assign each dimmer channel to a group number so that the channels overall level is controlled by an ePlate “Group Master fader” with the same group number.

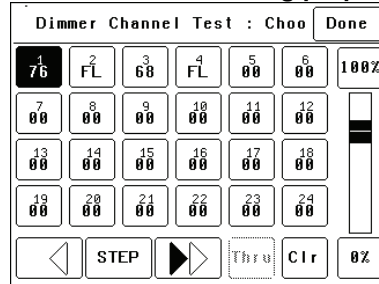
Press; [**Menu**] [**Dimmer Channels**] [**Setup**] then use the ◀ and ▶ buttons to select “Net master Group”. When you select a channel(s) (by touching it) then press [**Net Group Master**], you can select the group number of the ePlate group fader that is to be a group master over that channel(s) or for no group master press [**None**]. When you have made your selection press; [**Set**].



When finished press [**Save Setup**] [**Done**] [**Done**].

6.2.2 Channel Test

Pressing [**Menu**] [**Dimmer Channels**] [**Chan Test**] provides **local control** of dimmer levels from the touch screen for **testing purposes**.



The screen shows the current level of each dimmer channel. This level might be coming from the DMX control input or a memory recalled from an ePlate.

To test a dimmer channel(s), press the dimmers channel number(s). Selected channels have white text on a black background. In the example above, channel 1 is selected. You can add further channels to your selection by pressing their channel numbers.

To deselect a channel, press it again.

To select a range of channels, press a channel, then [**Thru**] then another channel.

To clear **all** selections, press [**Clr**].

When a channel(s) is selected it is **disconnected** from either the DMX or Memory control signal and connected to the virtual fader on the right of the touch screen. It can be faded up or down by sliding your finger on the virtual fader.

To instantly set the fader to 0% press the button at the bottom of the fader.

To instantly set the fader to 100% press the button at the top of the fader.

When a channel is deselected, it is disconnected from the virtual fader and returns to its previous DMX or memory control.

6.2.3 Test Sequencer

The Channel Test screen provides a simple sequencer that will automatically step through the channels. As each channel(s) is selected it is disconnected from either the DMX or Memory control signal and connected to the virtual fader on the right of the touch screen

- Select a channel (or several channels).
- Set a level on the virtual fader.
- To start the sequencer, press [▶](forward).
- To stop the sequencer press [■] (stop).
- To manually step the stopped sequence to the next channel press [■]
- To play the sequence in the opposite direction press [◀] (reverse).

When finished testing channels press; [**Done**] [**Done**] [**Done**].

All dimmers return to normal control.

Hint: When testing lamps locally from the e24V3 control panel, the test sequencer is especially useful if the lamps are in a different location to the e24V3 dimmer. You can start the sequencer then go and check that each lamp is working as the e24V3 automatically sequences through the dimmer channels.

6.3 DMX INPUT Menu

Selecting [Menu] [DMX Input] provides menus for;

- Patching.
- Viewing DMX Levels.
- Dimmer reaction to connection and loss of DMX signal.
- DMX alarm settings.

6.3.1 Patching

The patch allows you to patch (connect) DMX slots (addresses) from your DMX lighting controller to e24V3 dimmer channel numbers. Each e24V3 dimmer numbers its dimmer channels from channel 1 through to channel 24.

Patches are required when;

- A particular DMX slot number from the lighting controller is to control an e24V3 dimmer with a different dimmer channel number.
- A single DMX slot number is to control multiple e24V3 dimmer channel numbers.

To patch e24V3 dimmers to DMX slots or to examine the current patches, press; [Menu] [DMX Input] [Patch].

Patch DMX Input Menu		Save Patch	Cancel
Dim Chan	1 2 3 4 5 6		
Dmx Slot	025 026 027 028 029 030		
Dim Chan	7 8 9 10 11 12		
Dmx Slot	031 032 033 034 035 036		
Dim Chan	13 14 15 16 17 18		
Dmx Slot	037 038 039 040 041 042		
Dim Chan	19 20 21 22 23 24		
Dmx Slot	043 044 045 046 047 048		
		1:1 Patch	User Patch
		Clear Patch	

In this example, “Dim Chans” 1 to 24 are patched to “DMX Slots” 025 to 048 respectively.

6.3.2 1 to 1 Patch

Patches are often performed in contiguous blocks of addresses. The 1 to 1 patch provides a rapid method of patching all of the dimmers in one e24V3 rack to sequential DMX slots, starting from a DMX slot that you can select.

Press [Menu] [DMX Input] [Patch] [1:1 Patch].

		Cancel
1	2	3
4	5	6
7	8	9
Clr	0	Del
Start Slot		61
		Patch Series

Type in the DMX start slot number (0 to 512) for dimmer channel 1 in this e24V3 rack then press [Patch Series].

In this example, the starting DMX slot number is 61. Each e24V3 dimmer is automatically patched to the next higher DMX slot number.

Patch DMX Input Menu		Save Patch	Cancel
Dim Chan	1 2 3 4 5 6		
Dmx Slot	061 062 063 064 065 066		
Dim Chan	7 8 9 10 11 12		
Dmx Slot	067 068 069 070 071 072		
Dim Chan	13 14 15 16 17 18		
Dmx Slot	073 074 075 076 077 078		
Dim Chan	19 20 21 22 23 24		
Dmx Slot	079 080 081 082 083 084		
		1:1 Patch	User Patch
		Clear Patch	

To save the patch, press [Save Patch] or, to cancel the changes that you have made and return to the previous patch, press [Cancel].

6.3.3 User Patch

The User Patch allows you to individually patch each e24V3 dimmer channel to a DMX slot of your choice.

Press [Menu] [DMX Input] [Patch] [User Patch].

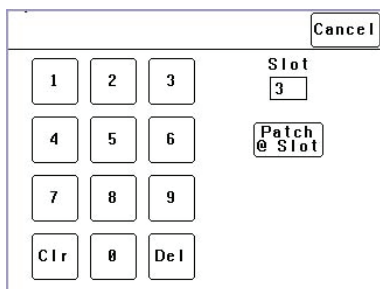
Select Dimmer Channel(s) the						Done
1	2	3	4	5	6	
001	---	---	---	---	---	
7	8	9	10	11	12	
---	---	002	---	---	---	
13	14	15	16	17	18	
---	---	---	---	---	---	
19	20	21	22	23	24	
---	---	---	---	---	---	
Patch		Un Patch		Thru		Clr

To select a channel, press that channel number. You can add further channels to your selection by pressing their channel numbers. To deselect a channel, press it again. To select a range of channels, press a channel, then [Thru] then another channel. To clear all selections, press [Clr].

In the example above, dimmer 1 is patched to DMX slot 1 and dimmer 9 is patched to DMX slot

2. Dimmer 12 is currently selected (white text on black background) ready to be patched.

To make a patch, select the dimmer channel(s) as described above then press **[Patch]**.



Type in the DMX slot number then press; **[Patch @ Slot]**. All of the selected dimmer channels are patched to the selected DMX slot number. Select other dimmers and patch them as required. To Un-patch a dimmer(s) select the dimmer(s) then press **[UnPatch]**.

When all patches have been made, press **[Done]**.

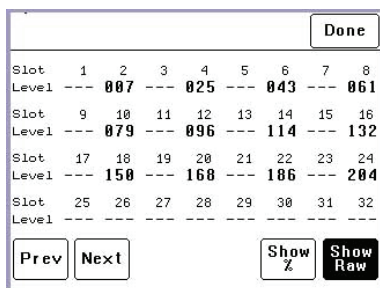
To save the patch, press **[Save Patch]** or to cancel the changes that you have made and return to the previous patch, press **[Cancel]**.

6.3.4 Clear Patch

To remove all patches in a single operation, press **[Menu] [DMX Input] [Patch] [Clear Patch] [Yes]**.

6.3.5 View Levels

The "View Levels" menu allows you to see the levels of the DMX control signals that are connected to the e24V3 dimmer. Press **[Menu] [DMX Input] [View Levels]**.



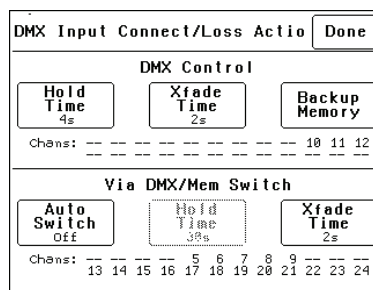
The screen shows 32 (of the 512) DMX slots and the level for each slot. Press **[Next]** or **[Prev]** to change to the next or previous page of 32 DMX slots. The DMX values can be displayed as a "%" (percentage), (0-100%) or as "raw data" levels (0-255) by selecting the relevant button at the bottom of the screen. When finished, press **[Done]**.

6.3.6 Connect Loss Action

This menu allows you to set the actions that the e24V3 will take when a DMX signal is connected (or restored after a loss). There are separate settings for

- Dimmer channels whose "Control Source" is **DMX**.
- Dimmer channels whose "Control Source" is the output of the **DMX/MEM Switch**. See "Control Source" earlier in this section for details.

Press; **[Menu] [DMX Input] [Connect Loss Action]**.



- The screen is divided into two sections;
- The top section sets the action for dimmer channels under "DMX Control". These settings are described below. The screen also shows the channels that are under "DMX Control". In the example above it is channels 10, 11 and 12.
 - The bottom section sets the action for dimmer channels controlled "via DMX/MEM Switch". These settings are described on the next page. The screen also shows which channels are under "DMX/MEM Switch" control. In the example above it is channels 5 to 9 and 13 to 24.

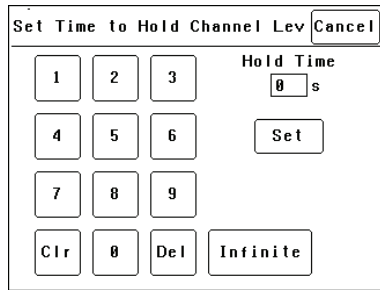
6.3.6.1 "DMX CONTROL" CONNECT LOSS ACTION AND BACKUP MEMORY

In the event that the DMX input signal is lost, the DMX controlled channels in the e24V3 can be configured to respond in different ways.

The e24V3 can either **HOLD** the last valid DMX levels indefinitely or, after a programmable (hold) time, it can crossfade (Xfade) to a "Backup Memory" previously stored in the e24V3.

When DMX is restored, the e24V3 will immediately crossfade (in the Xfade time) back to the DMX signal.

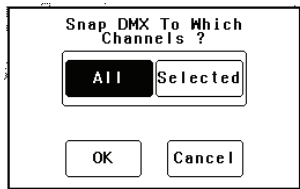
Pressing **[Hold Time]** brings up a keypad screen where you can enter a DMX hold time from 0 to 300 seconds (5 minutes) or you can select an **[Infinite]** DMX hold time. After making your selection press **[Set]**.



If a “Hold Time” other than “Infinite” has been set, pressing **[Xfade Time]** allows you to enter a time from 0 to 300 seconds (5 minutes) in which the DMX channels will crossfade to the “Backup Memory” (and back to DMX when it is restored).

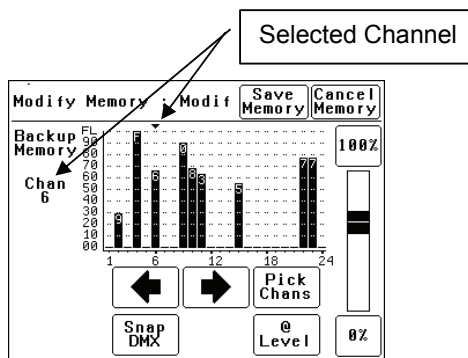
Pressing; **[Backup Memory]** instantly replaces the current output of **all** dimmer channels with the contents of the Backup Memory. This is irrespective of the “Control Source” settings for the dimmer channels. The “Backup Memory” screen allows you to either create your own memory using the controls on the screen or take a “snap” (copy) of the current DMX input signal by pressing **[Snap DMX]**.

If you press **[Snap DMX]** you must then choose to take a snapshot of either “All” DMX channels or only “Selected” channels. See below for details on how to select channels.



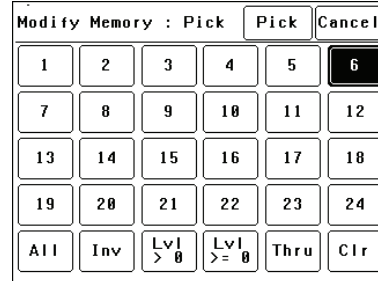
After taking a snap you can still use the controls on the screen to edit the “snapped” channel levels as described below.

To set the level of a channel(s) it must be selected. The selected channel(s) are indicated by a small triangle (▼) at the top of the screen above the channel bargraph and are also listed on the left of the screen. In the example below, channel 6 is selected.



There are two ways to select channels:

- Press [**◀**] or [**▶**] to step the small triangle (▼) through the channels.
- Press **[Pick Chans]** to reveal the channel pick screen.



To select a channel, press that channel number. Selected channels have white text on a black background.

You can add further channels to your selection by pressing their channel numbers.

To deselect a channel, press it again.

To select a range of channels, press a channel, then **[Thru]** then another channel.

To invert your selection(s) press **[Inv]**

To select all channels whose level is greater than zero press **[Lvl>0]**.

To clear **all** selections, press **[Clr]**.

When the required selections have been made press **[Pick]** and the screen returns to the “Modify Memory” screen.

When a channel(s) is selected it can be faded up or down by sliding your finger on the virtual fader.

To instantly set the fader to 0% press the **[0%]** button below the fader.

To instantly set the fader to 100% press the **[100%]** button above the fader.

To quickly set the selected channel(s) to a specific level press **[@ Level]**. Enter the level on the keypad that appears then press **[Set]**.

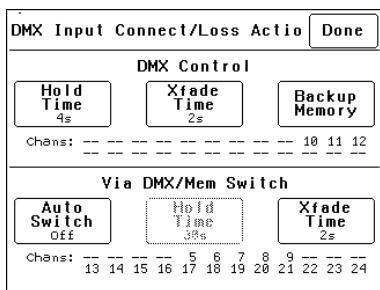
When the channel levels of the “Backup Memory” are correct, press **[Save Memory]**, or to cancel the changes that you have made and return to the previous Backup memory, press **[Cancel Memory]**.

When finished press; **[Done] [Done] [Done]**.

6.3.6.2 DMX/MEM SWITCH CONNECT LOSS ACTION

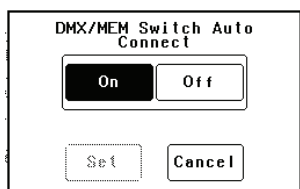
In the event that the DMX input signal is lost, the “DMX/MEM Switch” can be configured to respond in different ways.

Press;
[Menu] [DMX Input] [Connect Loss Action].



Note: If [Auto Switch] is greyed out (not available), then playback via LSCnet has been disabled from the options menu. This option can be selected when the e24V3 is ONLY to be controlled by DMX. See "Options Menu" for details.

Pressing [Auto Switch] allows you to turn "Auto Switch" On or Off.



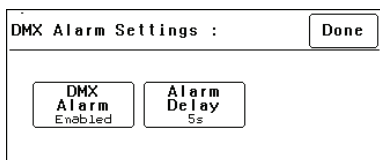
Make your choice then press [Set]. If Auto switch is **On**, then if a valid DMX signal is connected to the e24V3, the DMX/MEM Switch will operate and all dimmer channels whose control source is set to "switch" will cross fade to DMX control in the time set by the [Xfade Time] button. This crossfade can be from 0 to 300 seconds (5 minutes).

Note: The DMX/MEM Switch can also be manually operated from either a suitably programmed ePlate button or from the LCD touch screen by pressing [Menu] [Net Setup] [DMX/MEM Switch].

Pressing [Hold Time] allows you to set the time that the DMX/MEM Switch will remain in the DMX position if the DMX signal is lost (if it has been automatically operated by the presence of a DMX signal). The Hold Time can be set from 0 to 999 seconds (over 15 minutes) or to Infinite. If a "Hold Time" other than "Infinite" has been set, the channels will crossfade to their current "Memory" settings after the Hold Time expires.

6.3.7 DMX Alarm

Selecting [Menu] [DMX Input] [DMX Alarm] reveals the following screen.



Pressing [DMX Alarm] allows you to "Disable" or "Enable" the DMX alarm that occurs whenever there is no valid DMX signal present. The "DMX Alarm" is usually disabled when the e24V3 is only to be controlled by ePlates.

Pressing [Alarm Delay] brings up a keypad screen where you can enter the delay time between when the e24V3 is turned ON and when the "No DMX alarm" occurs. The time can be set from 0 to 300 seconds or "infinite". Setting the "Alarm Delay" time to be slightly longer than the "boot up" time of your DMX lighting controller will prevent unwanted alarms when both the e24V3 and Lighting Controller are switched on at the same time.

6.4 Memories Menu

Selecting [Menu] [Memories] provides menus for;

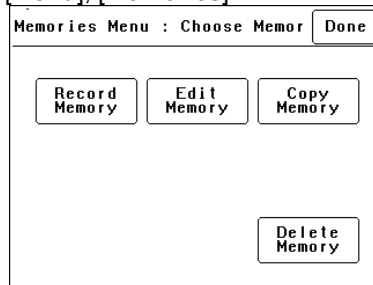
- Recording Memories
- Editing Memories
- Copying Memories
- Deleting memories

An e24V3 dimmer can hold up to 80 memories. Each memory only contains the intensity levels for the dimmer channels that you select when you record (or edit) that memory. If a channel is not selected in a memory then recalling that memory will never affect that channel. Selected channels in a memory can have any level from 0% to 100%.

Memories are recalled from ePlate wall stations.

6.4.1 Recording Memories

Press: [Menu], [Memories].



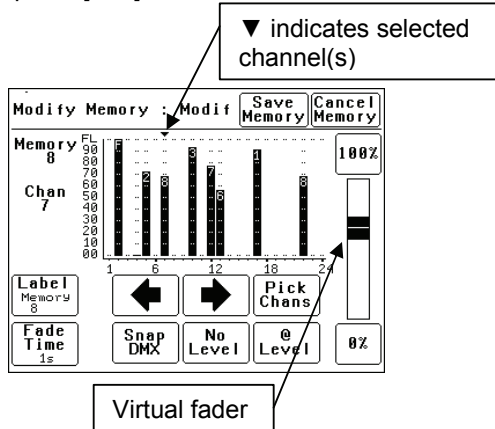
To record a memory press: [Record Memory].



The current output of the e24V3 (if any) is blacked out.

The memories are organised in 4 banks of 20 memories. The buttons on the right select the banks. Select the bank and memory number to be recorded. When a memory is selected its contents are shown on the output of the **e24V3** and also on the channel indicators. This allows you to preview the contents of memories on the output and “pick” either an empty or existing memory.

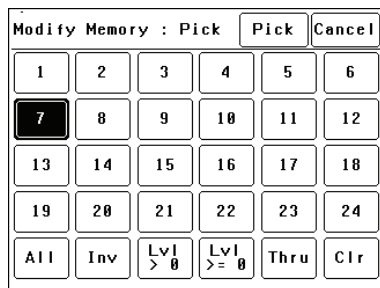
To confirm your selection press [**Pick**].
If the memory exists, it will be deleted. To confirm press [**Yes**].



To vary the level of a channel it must be selected. The selected channel is shown below the memory number and also indicated by small triangle (▼) above the selected channel(s). In this example channel 7 is selected.

There are two method to select channels:

- Press [**←**] or [**→**] to step (▼) through the channels.
- Press [**Pick Chans**] to reveal the channel pick screen.



- To **select a channel**, press that channel number. Selected channels have white text on a black background.
- You can **add** further **channels** to your selection by pressing their channel numbers.
- To **deselect** a channel, press it again.
- To select a **range** of channels, press a channel, then [**Thru**] then another channel.

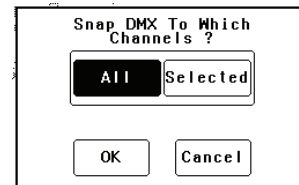
- To **invert** your selection(s) press [**Inv**]
- To select all channels with a level greater than zero press [**Lvl > 0**].
- To select all included channels (including those with level of zero) press [**Lvl > = 0**]. See “How Memories Work” for details on included channels with a level of zero.
- To clear **all** selections, press [**Clr**].

When the required selections have been made press [**Pick**] and the screen returns to the “Modify Memory” screen.

To set the level of the selected channel(s) either:

- Slide the virtual fader
- Press the [**0%**] or [**100%**] buttons.
- Press [**@ Level**] and enter a value.

Channel levels can also be set using the DMX input from a lighting controller. Press [**Snap DMX**] to take a snapshot of the DMX input signal.

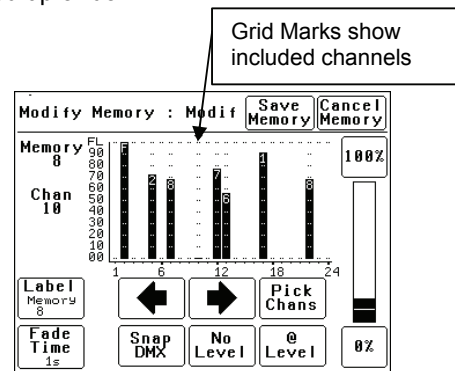


If you do not want to capture the level of all channels you can use the “selected” option to only include the levels of the channels that you have selected. See “Included Channels” below.

After taking a snap you can still use the controls on the screen to edit the “snapped” channel levels.

6.4.2 Included Channels

If a channel is **not included** in a memory then the channel is **not affected** when that memory is faded up or down.



A memory only contains the channels that you select. Selected channels can have any level including zero.

When a memory is recalled, only channels that are in the memory are affected. If a channel is

not in a memory, its current level (if any) will not be affected when that memory is recalled.

Note: This is a very important concept. It is fully explained in section 8, ePlates and LSC Net

You can see which channels are included in a memory by the grid marks above the channels. In the example above, channels 2, 5, 7, 10, 11, 12, 17 and 22 are included. Note that channel 10 is included but has a level of 0%.

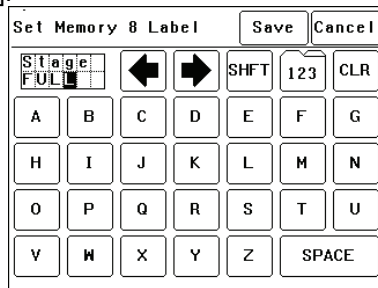
Channels 1, 3, 4, 6, 8, 9, 11, 14, 15, 16, 18, 19, 20, 21, 23 and 24 are not included in this memory.

If you have included a channel (by giving it a level) and then decide to remove it from the memory then you must select the channel and press **[No Level]**.

6.4.2.1 MEMORY LABELS

The default label for each memory is its number. For example, "Memory 8".

You can enter your own label by pressing **[Label]**.

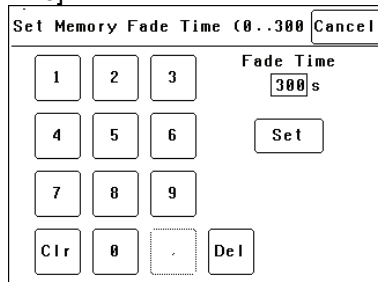


Pressing **[CLR]** clears the current label. Press **[←]** or **[→]** to move the flashing cursor then select the letters or press **[123]** to select numbers. Press **[Shift]** for uppercase letters or symbols instead of numbers. When finished press **[Save]**.

6.4.2.2 FADE TIME

The default Fade time for each memory is 1 second.

You can set your own fade time by pressing **[Fade Time]**.



A memory may have a fade time in the range 0 to 300 seconds (5 minutes). A time of less than 10 seconds may in the range 0.0 to 9.9 seconds. From 10s the time is in increments of 1second. When the fade time is correct press **[Set]**.

Note: An ePlate button can be programmed to replay a memory using the time saved in the memory or the button can have its own specific fade time. In this case the memories fade time will be ignored.

To save the memory press;

[Save Memory] [Exit].

The original dimmer output is restored.

6.4.3 Edit Memory

To edit a memory press:

Press: **[Menu], [Memories] [Edit Memory]**.

The current output of the **e24V3** (if any) is blacked out.

Select the memory to be edited. As each memory is selected its contents are shown on the output of the **e24V3** and also on the channel indicators. This allows you to preview the contents of each memory on the output.

To confirm you selection press **[Pick]**.

Editing a memory is the same as recording a memory.

See section **6.4.1 Recording Memories** for details.

6.4.4 Copy Memory

To copy a memory press:

Press: **[Menu], [Memories] [Copy Memory]**.

The current output of the **e24V3** dimmer (if any) is blacked out.

Select a "source" memory to be copied. As each memory is selected its contents are shown on the output of the **e24V3** and also on the channel indicators. This allows you to preview the contents of each memory on the output and make the correct choice.

When the correct source memory is selected press **[Pick]**.

Select a "destination" memory number then press **[Pick]**.

You can copy more memories or if finished press **[Exit], [Done] [Done]**.

6.4.5 Delete Memory

To delete a memory press:

Press: **[Menu], [Memories] [Delete Memory]**.

The current output of the **e24V3** dimmer (if any) is blacked out.

Select a memory to be deleted. As each memory is selected its contents are shown on the output of the **e24V3** and also on the channel indicators. This allows you to preview the contents of each memory on the output and make the correct choice.

When the correct memory to be deleted is selected, press **[Pick]**. To confirm, press **[Yes]**.

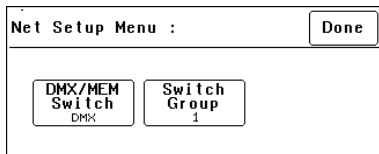
You can delete more memories or if finished press **[Exit], [Done] [Done]**.

6.5 Net Setup Menu

The "Net Setup" menu is used to control the manual operation of the DMX/MEM Switch.

Press: **[Menu], [Net Setup]**.

Note: If [Net Setup] is greyed out (not available), then playback via LSCnet has been disabled from the options menu. This option can be selected when the e24V3 is only to be controlled by DMX. See “Options menu” for details.

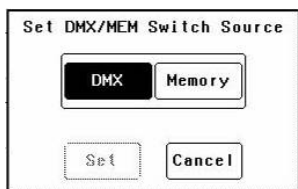


6.5.1 DMX/MEM Switch Operation

All channels that have their “Control Source” attribute set to “Switch” can be switched between either “DMX” control or “Memory” control.

The DMX/MEM Switch can be operated from a suitably programmed button on an ePlate or directly from the LCD touch screen on the e24V3.

To manually operate the “DMX/MEM Switch” from the touch screen, press; [Menu], [Net Setup] [DMX/MEM Switch].



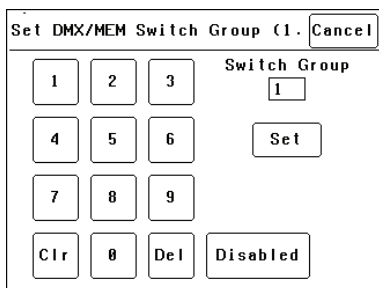
Select either [DMX] or [Memory] then press [Set].

6.5.2 Switch Group

An ePlate button that has been programmed to operate the DMX/MEM Switch can also be programmed with a “Switch Group Number”. You can set the DMX/MEM Switch in each e24V3 to only be operated by a particular “Switch Group Number”.

Therefore, in setups with more than one e24V3, individual ePlate buttons can be programmed to only operate the DMX/MEM Switch in e24V3 dimmers with the matching “Switch Group Number”.

To set the “Switch Group Number”, from the “Net Setup” menu (above) press; [Switch Group Number].



Enter the required Switch Group Number in the range from 001 to 255 (to match the required ePlate button) or for no Switch Group press [Disabled], then press [Set] [Done] [Done].

6.6 Options Menu

Selecting [Menu] [Options] provides menus for;

- Module Status
- Beeper
- About
- Lock Dimmer
- Change Lock Code
- Dimmer Name
- Date and Time
- Net Playback: Enable/Disable
- Reset

6.6.1 Module Status

Pressing [Menu] [Options] [Module Status] reveals information about the input power phases, temperature and fan speed of the e24V3.

Module Status :			Done
Module	Bank1	Bank2	
Phase A :	Nominal	Nominal	
Phase B :	Nominal	Nominal	
Phase C :	Nominal	Nominal	
Temperature :	28C	28C	
Fan Speed :	8%	8%	
Status			
Dimmer OK			Ack Next

6.6.2 Beeper

The e24V3 can be set to “Beep” in acknowledgment to every key press on the touch screen.

To switch off the beeper, press; [Menu] [Options] [Beeper is On].

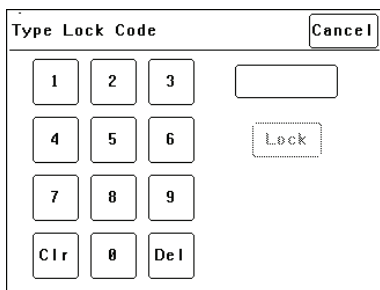
To switch on the beeper, press; [Menu] [Options] [Beeper is Off].

6.6.3 About

Pressing [Menu] [Options] [About] reveals information about the software version, model and voltage of the e24V3.

6.6.4 Lock / Unlock

To lock the touch screen of the e24V3 and prevent unauthorised access press [Menu] [Options] [Lock Dimmer].



Using the keypad, type in the current 4 digit lock code then press [**Lock**]. The **e24V3** is shipped from the **factory** with the **lock code** set to **0000**. The menu returns to the home screen and the [**Unlock**] button appears instead of the [**Menu**] button.

To **unlock** the touch screen of the **e24V3** press [**Unlock**] then type in the current 4 digit code then press [**Unlock**].

6.6.5 Change Lock Code

To change the lock code, press [**Menu**] [**Options**] [**Change Lock Code**].

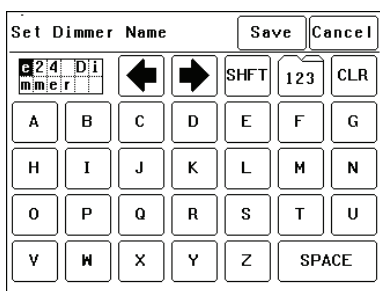
Type in the current 4 digit lock code then press [**Enter**]. (The **e24V3** is shipped from the **factory** with the **lock code** set to **0000**).

Type in your new lock code then press [**Enter**]. To confirm, re type the new lock code then press [**Set Code**].

6.6.6 Name

The name of each **e24V3** dimmer is shown on the home screen of the LCD touch screen. The default name is "e24 Dimmer" but you can give the dimmer a name of your choice. Naming each dimmer is useful in installations of more than one **e24V3**. To change the name of a dimmer press;

[**Menu**] [**Options**] [**Dimmer Name**].



To start a new name press [**CLR**]. Use the ◀ or ▶ buttons to move the flashing cursor Type in your name. For numbers press [**123**]. When finished press [**Save**] [**Done**] [**Done**].

6.6.7 Time and Date

The **e24V3** keeps a log of its status that is time and date stamped. To set the time and date used by the log press;

[**Menu**] [**Options**] [**Date & Time**].

The screen shows the current time and date settings.

To change the Time, press [**Time**]. Use the keypad that appears to enter the time in 24 hour format then press [**Set**].

To change the Date, press [**Date**]. Use the keypad that appears to enter the date then press [**Set**].

When finished press [**Done**].

6.6.8 Net Playback

If the **e24V3** is only to be controlled by DMX then it is possible to disable (dim out) all memory menus and other network functions and hence simplify the menu operations. In addition, when "Net Playback" is disabled, all dimmer channels are controlled by DMX, irrespective of their previous "Control Source" settings.

Press [**Menu**] [**Options**] [**Net Playback**].

Choose either [**Enable**] or [**Disable**] then press [**Set**].

6.6.9 Reset

The **e24V3** provides two different types of reset function. SYSTEM reset and TOTAL reset.

6.6.9.1 SYSTEM RESET

In the unlikely event that the **e24V3** fails to respond, the operating system may be reset so that the software may initialise and recommence normal operation. Performing a system reset will **not** affect any of the settings or memory.

To perform a SYSTEM RESET press;
[**Menu**] [**Options**] [**Reset**] [**System Reset**] [**Yes**].

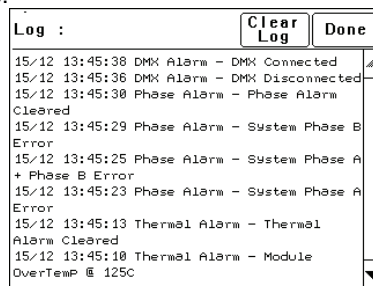
6.6.9.2 TOTAL RESET

Total Reset will **ERASE** all the settings and memory from the **e24V3** and reset the operating system.

To perform a TOTAL RESET press;
[**Menu**] [**Options**] [**Reset**] [**Total Reset**] [**Yes**].
The **e24V3** asks you to confirm by pressing [**Yes**] again.

6.7 Log Menu

Selecting [**Menu**] [**Log**] shows the status log showing time and date stamped operations and alarms.



The log can be used to analyse any problems you may have encountered such as loss of control signals, over temperature alarms or loss of input power phases etc.

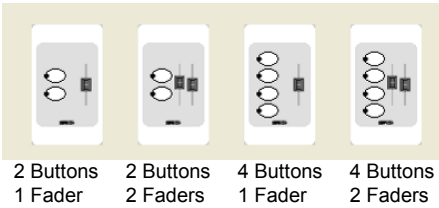
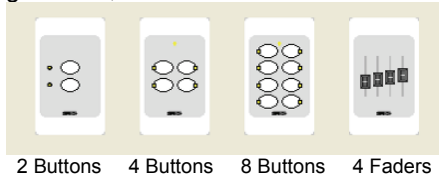
7 ePLATE REMOTE CONTROLLERS

ePlates are the remote wall station controllers for the **e24V3** dimmers or other LSCnet enabled products. The ePlates allow you to recall internal memories from the **e24V3** for replay at a pre-programmed level and fade time. ePlates can also be programmed to perform other functions such as selecting “memory” or “DMX” operation or locking out other ePlates. ePlates are connected to the **e24V3** dimmers via a communications bus called LSCnet.

Note: If “Net Playback” functions are disabled in the e24V3 menu, the Memories and Net Setup buttons in the Menu are dimmed, and ePlates will not function. See section 6.6.8 Net Playback for details.

7.1 ePlate Models

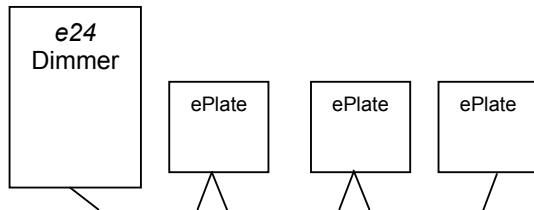
ePlates are available in the following configurations;



Each button and its associated indicator can be independently programmed to control up to 4 independent events, allowing complex functions to be easily operated by a novice. See below for details of specific ePlate functions.

7.2 LSC Net Cabling

LSCnet uses Cat5 cable for the interconnection of devices and all devices are connected in a daisy chain fashion. All connections are via industry standard RJ45 connectors.

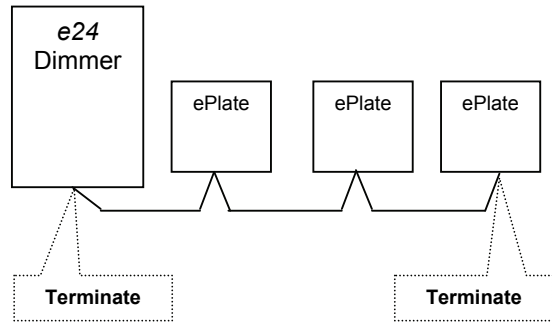


Cat5 cable daisy chained between devices.

The LSCnet cable is used to carry both **data** and **power** for the ePlates. The **e24V3** can power up to 4 ePlates. Up to 800 meters of Cat5 can be installed before a data repeater is needed. If more than 800m is required then a LSCnet data repeater is required. Contact your LSC agent for details.

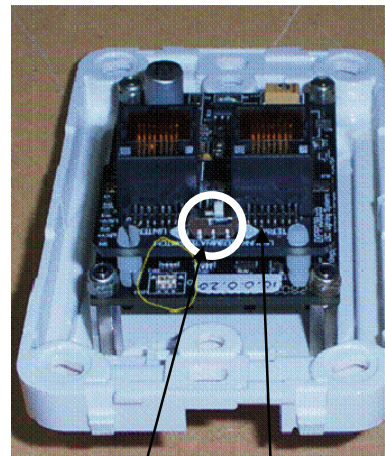
7.3 LSCnet TERMINATION

The LSCnet must be correctly **terminated**. Termination is required at BOTH ends of the data cabling.



Each ePlate has a main processor board with a small “LSC Net Connection Board” plugged into the back of it. This “LSC Net Connection Board” contains the two network RJ45 connectors and the “LSCnet TERMINATE SWITCH”.

Rear view of ePlate



LSCnet Terminate Switch

LSC Net Connection Board

7.4 Recording Memories

Memories are **recorded** (or edited) from the e24V3's LCD touch screen. See section **6.4 Memories Menu** for details on how to record memories.

A e24V3 dimmer can hold up to 80 memories. Each memory only contains the intensity levels for the dimmer channels that you select when you record (or edit) that memory. If a channel is not selected in a memory then recalling that memory will never affect that channel.

This is an important concept.

It means you have to decide whether or not you want a channel to be in a memory. Fading up a memory will not necessarily replace the current output of the dimmer with the memory you have just faded up. Only the channels in the memory you have just faded up will change. Any channels that are not in the new memory will remain as they were. Selected channels in a memory can have any level from 0% to 100%.

Memories are recorded (or edited) by either;

- Selecting channels and giving them a level via the touch screen controls.
- or
- Taking a 'snapshot' of the current DMX input levels. These levels can then be edited if required.

7.5 Memory Recovery after Power

Loss

When the power is restored to an e24V3 after a power loss, channels controlled by DMX will immediately respond to the current DMX levels. However, channels controlled by Memories respond differently depending upon the duration of the power loss.

- If the power returns within 2 hours, the memory channels will return to their last memory levels.
- If the power returns after 2 hours, memory channels will remain OFF. To restore output you must recall the required memory.

7.6 Recalling Memories

Memories are **recalled** from ePlate wall stations.

7.7 Pre-Programmed ePlates

ePlates are shipped from the factory with pre-programmed standard configurations.

- **2 Button ePlates**

Button 1 recalls Memory 1 at 100%
Button 2 recalls Memory 2 at 100%

- **4 Button ePlates**

Button 1 recalls Memory 1 at 100%
Button 2 recalls Memory 2 at 100%
Button 3 recalls Memory 3 at 100%
Button 4 recalls Memory 4 at 100%

- **8 Button ePlates**

Button 1 recalls Memory 1 at 100%
Button 2 recalls Memory 2 at 100%
Button 3 recalls Memory 3 at 100%
Button 4 recalls Memory 4 at 100%
Button 5 recalls Memory 5 at 100%
Button 6 recalls Memory 6 at 100%
Button 7 recalls Memory 7 at 100%
Button 8 recalls Memory 8 at 100%

- **1 Fader ePlates**

Fader 1 controls Memory 1

- **2 Fader ePlates**

Fader 1 controls Memory 1
Fader 2 controls Memory 2

- **4 Fader ePlates**

Fader 1 controls Memory 1
Fader 2 controls Memory 2
Fader 3 controls Memory 3
Fader 4 controls Memory 4

A pre-programmed 2 button ePlate is available to control the operation of the Memory/DMX Switch.

- Button 1 selects DMX
- Button 2 selects Memory

7.8 Pre-programmed Memory Control

The buttons on the "Pre-Programmed" ePlates all recall a different memory number at *full level*.

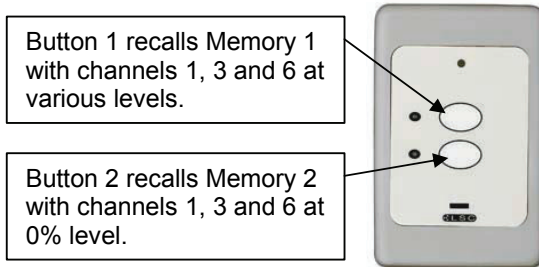
Question: If every button recalls a memory at full level, how do you turn a memory off?

Answer: You playback a different memory containing the same channels but with all of their channel levels set to 0% in that memory.

When a memory is recorded, it contains selected channel(s) at any level (including zero level). Therefore, if memory 1 contains channels at a level of 80%, pressing button 1 on an ePlate will fade up those channels to 80%.

If memory 2 contains the **same channels** at a level of 0%, pressing button 2 on an ePlate will fade those channels off.

For example;



Using this method, each pair of buttons on an ePlate are easily used as On (fade up) and OFF (fade down) buttons.

- You record the odd numbered memories with the levels you require.
- You record the even numbered memories with the same channels but at 0% level.

7.9 Programming ePlates

You can program the functions of the buttons and faders on ePlates to suit your specific requirements using a computer program available from your LSC agent or you can contact LSC and they will custom program ePlates for your specific requirements.

The programmable functions of buttons, indicators and faders are listed below.

7.10 ePlate Functions

A **button** can be configured to:

- Activate a memory with a specific fade time and level.
- Control multiple memories from a single button.
- Switch dimmer channels between DMX and Memory (ePlate) control (if the channel's "control source" has been set to "switch").
- Lock / unlock the operation of other ePlates.

The **indicators** beside each button are independently programmed and can indicate:

- Memory # activated. Brightness of indicator shows level of memory.
- ePlate active or locked.
- DMX or Memory control selected.

A **fader** can be configured to:

- Control the level of a memory (or channel).
- Act as a Grand Master over all channels.
- Act as Group Sub Master over the memory levels of channels in that group number.
- Set the Fade Time for a memory.

8 INDICATORS, ALARMS & TROUBLESHOOTING

Warning. No user controls or user serviceable parts are located inside the **e24V3** Dimmer. Refer all servicing to suitably qualified personnel.



If the **e24V3** is not functioning correctly, check the LED indicators on the front panel and the status area at the bottom of the LCD screen for any messages.

8.1 Status LED

- Green = Normal operation.
- Red (flashing) = Alarm. See message on LCD touch screen.
- Red (steady) = Alarm is acknowledged but the problem still exists.

Possible causes of a flashing Status LED are;

- **Over Temperature.**

If the temperature of the **e24V3** is too high, the circuitry automatically switches off the dimmers. All dimmer channels will flash red. Either reduce the load or increase the cooling to the **e24V3**. When the temperature returns to normal, the **e24V3** automatically returns to normal operation.

- **Temperature sensor failure.**

If the temperature sensor fails, the circuitry automatically switches off the dimmers. All affected dimmer channels will flash red.

- **Loss of input power phase(s).**

If any of the input power phases are lost, the affected dimmer channel LEDs will flash red.

In the event of any alarm, read the message on the status area of the LCD screen. Press **[Ack]** on the touch screen to **acknowledge** the alarm. This stops the status LED from flashing but it remains red until the fault condition is rectified.

8.2 DMX LED

- Green = Valid DMX control signal connected.
- Red (flashing) = Error on DMX control signal.
- Green (flashing) = Loss of DMX control signal.

8.3 LSCnet LED

- **Green** = Valid LSCnet control signal connected (from ePlates).
- **Green (flashing)** = Data traffic detected on LSCnet.

8.4 DMX Source



If your **e24V3** is fitted with the Wireless DMX option, the LED's beside the Wireless DMX panel show the DMX source that is controlling the dimmers.

If **both** cable and wireless DMX are available, the **e24V3** will automatically use the cable DMX.

Cable LED

- Green = Cable DMX Data in use.

Wireless LED

- Green = Wireless DMX Data in use.
- Orange = Wireless DMX Data available but not in use.

8.5 Channel LEDs

The numbered LED's around the perimeter of the control panel light when their respective dimmer channel is on. The brightness of the LED shows the channel level.

- They light **green** when under *DMX* control.
- They light **red** when under *local* control.

If a dimmer channel is not working check the MCB (Miniature Circuit Breaker) for that dimmer channel.

8.6 Circuit Breakers

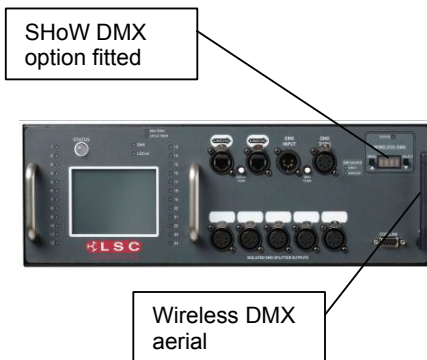
If the MCB has tripped (OFF), firstly try to determine the cause of the breaker tripping. It could be a blown lamp or a circuit overload. Rectify to problem (replace the lamp or reduce the load) then restore the MCB. If the MCB continues to trip, refer the problem to a suitably qualified person.

If the MCB has not tripped, you can test the operation of the dimmer from the local LCD touch screen. See section 6.2.2 "Channel Test" for details. If the dimmer is working from the touch screen but not via DMX, check that the dimmer is patched to the correct DMX slot and configured for the correct "control source".

9 WIRELESS DMX512 OPTION

Two models of wireless DMX receivers are available as an option on the **e24V3**.

- **W-DMX** supplied by Wireless Solutions.
- **SHoW DMX** supplied by City Theatrical.



The wireless DMX modules supplied by LSC for the **e24V3** are modified receiver boards from the above manufacturers. You will need a compatible wireless DMX transmitter module from the same manufacturer of the wireless DMX option fitted to your **e24V3**.

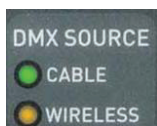
LSC does not supply wireless DMX transmitters.

Contact either www.wirelessdmx.com for **W-DMX** transmitters or www.citytheatrical.com for **SHoW DMX** transmitters.

The wireless DMX module can work as the sole DMX input source for the **e24V3** or as a back-up source for the cable DMX input.

If **both** cable and wireless DMX are available, the **e24V3** will automatically use the cable DMX.

The DMX SOURCE indicators show the current DMX status.



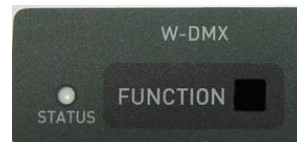
Cable LED

- Green = Cable DMX Data in use.

Wireless LED

- Green = Wireless DMX Data in use.
- Orange = Wireless DMX Data available but not in use.

9.1 Wireless Solutions W-DMX Operation



To link the W-DMX receiver in the e24V3 to your DMX transmitter, ensure that the DMX transmitter is ON then press and release the FUNCTION button. This process may take up to 10 seconds to synchronise. Once synchronised, the STATUS indicator will illuminate.

To unlink the W-DMX receiver from the DMX transmitter, press and HOLD the function button until the STATUS indicator goes off.

9.2 City Theatrical's SHoW DMX Operation



The STATUS indicator shows the current wireless status.

- Flashing RED = NO DMX transmitter detected.
- Flashing GREEN = DMX transmitter detected.

The display will timeout and turn off after 10 seconds if no buttons are pressed. If the display has turned off, press either button to turn it on.

- Press the left button to move through the four menus.

Menu	Display	Description
1	ID XX	SHoW ID (1-64)
2	P XX	Power Setting
3	SW	Software Version
4	CERT	Radio Compliance

Press the right button to activate a menu. While in a menu;

- Press the right button to move forward through the menu options.
- Press the left button to move back through the menu options.
- Press and HOLD the right button to scroll forward through the menu options
- Press and HOLD the left button to select a menu options.

SHoW ID menu

After Power-up, the STATUS LED will blink and the display will read: **ID xx** (xx = SHoW ID). When you enter the menu (left button) the display will change to **> xx**. Scroll through the available choices and select the one that you want (press and hold the left button).

There are 64 SHoW IDs. Each corresponds to a different combination of Hopping Pattern and Broadcast Bandwidth settings. The SHoW IDs are defined in the table below.

Show ID	Hopping Pattern	Band width	Show ID	Hopping Pattern	Band width
1	1	Full	33	1	WiFi 4-9
2	2	Full	34	2	WiFi 4-9
3	3	Full	35	3	WiFi 4-9
4	4	Full	36	4	WiFi 4-9
5	5	Full	37	5	WiFi 4-9
6	6	Full	38	6	WiFi 4-9
7	7	Full	39	7	WiFi 4-9
8	8	Full	40	8	WiFi 4-9
9	9	Full	41	9	WiFi 4-9
10	10	Full	42	10	WiFi 4-9
11	11	Full	43	11	WiFi 4-9
12	12	Full	44	12	WiFi 4-9
13	13	Full	45	13	WiFi 4-9
14	14	Full	46	14	WiFi 4-9
15	15	Full	47	15	WiFi 4-9
16	16	Full	48	16	WiFi 4-9
17	1	WiFi 1-6	49	1	WiFi 7-11
18	2	WiFi 1-6	50	2	WiFi 7-11
19	3	WiFi 1-6	51	3	WiFi 7-11
20	4	WiFi 1-6	52	4	WiFi 7-11
21	5	WiFi 1-6	53	5	WiFi 7-11
22	6	WiFi 1-6	54	6	WiFi 7-11
23	7	WiFi 1-6	55	7	WiFi 7-11
24	8	WiFi 1-6	56	8	WiFi 7-11
25	9	WiFi 1-6	57	9	WiFi 7-11
26	10	WiFi 1-6	58	10	WiFi 7-11
27	11	WiFi 1-6	59	11	WiFi 7-11
28	12	WiFi 1-6	60	12	WiFi 7-11
29	13	WiFi 1-6	61	13	WiFi 7-11
30	14	WiFi 1-6	62	14	WiFi 7-11
31	15	WiFi 1-6	63	15	WiFi 7-11
32	16	WiFi 1-6	64	16	WiFi 7-11

The SHoW DMX system supports 16 different frequency hopping spread spectrum (FHSS) hopping patterns, full bandwidth broadcasting mode and three different limited bandwidth broadcasting modes. Select the SHoW ID for the combination that you require.

POWER Menu

This menu is only used when the SHoW DMX is transmitting. This mode is not used by the e23V3.

SOFTWARE Menu

This menu shows the current software version of the unit and its radio receiver.

CERTIFICATION Menu

This menu shows the FCC, IC and CE compliance information.

10 DMX512 EXPLAINED

DMX512/1990-A is the industry standard for the transmission of digital control signals between lighting equipment. It utilises just a single pair of wires on which is transmitted the level information for the control of up to 512 DMX slots (addresses or channels).

The information for each slot is sent sequentially. The level of slot 1 is transmitted, then the level of slot 2, then 3, etc. up to a maximum of 512 slots. This stream of data containing the levels for all 512 DMX slots is repeated a minimum (generally) of 44 times per second. This provides sufficient updates of channel information for smooth fade transitions.

As the DMX512-A signal contains the level information for all slots, each piece of equipment needs to be able to read the level(s) of the slots(s) that apply only to that piece of equipment. To enable this, the **e24V3** dimmer has a “DMX Patch” menu that allows you to patch (connect) each DMX slot (address) from your lighting controller to a **e24V3** dimmer channel number or to multiple dimmer channel numbers.

When good quality data cables are used, DMX512 cable runs may be up to 1,000 metres in length. When several DMX feeds are required (to feed different locations), DMX512 splitters must be used. These provides multiple isolated DMX512 feeds.

The **e24V3** provides a “DMX Thru” output allowing you to loop the DMX signal from one **e24V3** to the next. The last **e24V3** in the chain must have the “DMX Terminate switch” set to TERM to terminate the line.

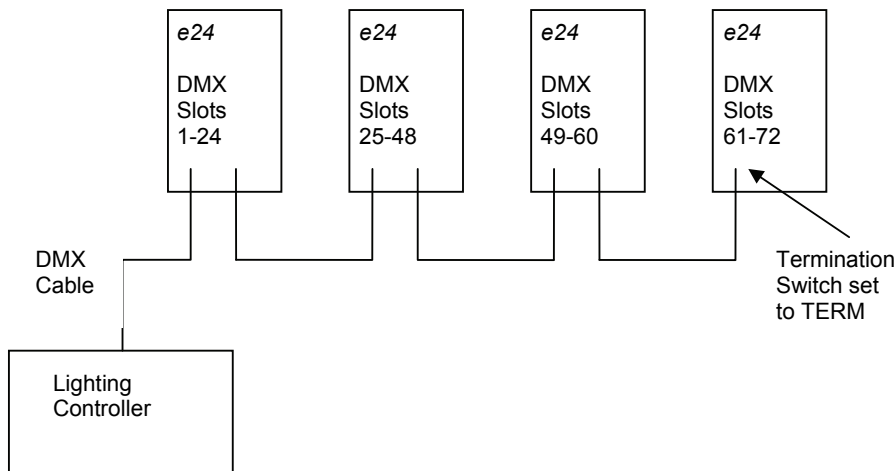
Note: Do not use unscreened microphone or low speed data cables for DMX. This can cause problems in the DMX network. Make sure the cable conforms to the EIA485 cable requirements by providing the following specifications:

- Low capacitance
- One or more twisted pairs
- Foil and braid shielded
- Impedance of 85 -150 Ohms, nominally 120 Ohms
- 22AWG gauge for continuous lengths over 300 metres

The following diagrams illustrate a simple setup utilising DMX512.

10.1 Typical DMX Installation

In the following example, the DMX output signal from the lighting control desk is fed to the DMX connector of the first **e24V3** dimmer. The DMX cable is then looped to the following **e24V3** dimmers. The order of the daisy chaining is not important as each **e24V3** dimmer channel can be patched to any DMX slot number. The end of the DMX line is terminated to prevent the signal reflecting back up the line and causing possible errors.



11 FAQ

11.1 Frequently Asked Questions

Q. How do the **e24V3**'s go with a load such as a mirror balls. Is there any trickle?

A. No problems. We use a circuit called PTFD (Pulse Transformer Fired Dimming), which means that we can control virtually ANY type of load (Resistive, Inductive, Strobes, Motors, ELV, etc), without the need for dummy loads. This is one of the key differences between LSC and most other brands of dimmers.

Q. Do the dimmers work on HTP or LTP when the ePlate wall stations are connected.

A. The ePlates work in LTP mode. So if you activate Memory #3 it takes control. Then if another user activates Memory #7 and it contains the same channels saved in memory #3 then Memory #3 is de-activated.

Each Memory can contain any combinations of channels, so Memory #1 can turn all the lights on at full, whereas Memory #2 may only control the odd channels. This allows the client to have a very flexible configuration that is powerful, whilst remaining simple to use.

Q. Can you disable the ePlates so that no one plays with one while a console is in use?

A. Yes. You can setup a few different configurations for how DMX and the ePlates interact. The most common configuration is "**Auto Switch**". In this mode as soon as the dimmer sees DMX (after the console is turned on) then the ePlates are disabled, so no one can 'accidentally' turn the lights on/off whilst the console is in use. When the console is turned off there is a preset delay (1-999 seconds) and then the ePlates are re-enabled.

The other modes allow a button on a specified ePlate/s to be programmed to manually change between DMX and Memory (architectural) mode.

Q. How do the ePlates connect to the dimmers and how do the dimmers link to each other? Is it all your LSCnet?

A. The ePlate wall stations and **e24V3** dimmers all connect in a daisy-chain, just like DMX. We use Cat5 cable, as it is cheap and easy to install. This Cat5 cable carries the LSCnet data and power to the ePlates.

Q. How many ePlate wall stations can I have in one system?

A. The limit is 65,535 "devices" on a network. These can be made up of **e24V3** dimmers and/or ePlates. Depending on the physical distances involved and the quantities of ePlates and **e24V3**'s you may need data repeaters and power supply boosters to make it work.

There are two simple rules

1) Data Limit. You can run up to 800m of Cat5 cable and 32 devices before a data repeater is needed.

2) Power Limit....A single **e24V3** dimmer can provide enough power to run 4 ePlates. If you need more ePlates then you will need either another **e24V3** dimmer or an LSCnet PSU booster.

Q. Is there a max cable length for the LSCnet?

A. No. You will need a data repeater every 800m, but there is no limit as to how many repeaters you run. If you need to cover very long distances (for example, greater than 2km) then you can use the LSCnet-ethernet bridge to convert the LSCnet data into standard TCP-IP ethernet and then use existing computer networks (including the internet) to carry the data.

Q. Can I remotely monitor the status of my **e24V3**?

A. Yes. You will need LSC's "Houston" software. This is a Windows PC application program that allows you to remotely monitor and fault report on all LSCnet enabled equipment on a single network.

12 SPECIFICATIONS

Dimmer Channels / Non-Dim Patch Channels	24
Max. Rating per Channel	13 Amps
MCB Breaking Capacity per Dimmer Channel	6000 Amps
Max. No. of Patched Output Circuits	48, 60 or 64 depending upon output option
Current Control Technology	√
Number of Curves per Dimmer Channel	8
Memory Storage	80
Power up in last known state	√
Channel Output Level mimic LEDs	√
DMX512 Input and Link-thru connectors	√
DMX splitter with 5 isolated outputs	√
Wireless DMX option	√
LSCnet Input and Output connectors	√
Variable speed Fan Cooling System	√
Mains Distribution Protection	2 x 63 Amp 30ma Trip, Residual Current Device
Power Input Monitoring	Status LEDs
Series 120 Volt Patching	Optional on Australian Models
Auxiliary Power Outputs	3 x Single phase
Input Power Requirements	Max. 117 Amps 3P+N+E 220-240VAC 50/60 Hz
Height	780mm
Width	680mm
Depth* (* includes wheels fitted to covers.)	730mm
Shipping Weight	84 kgs
Actual Weight	62 kgs

13 SOFTWARE UPGRADE

LSC Lighting Systems has a corporate policy of continuous improvement to its products. The **e24V3** software (firmware) is subject to this policy as new features are added and existing features improved.

The software version of your **e24V3** is momentarily displayed on the LCD touch screen when the **e24V3** is switched on or at any time by pressing **[Menu] [Options] [About]**. The latest version of **e24V3** software can be downloaded from the LSC web site, www.lsclighting.com

To upgrade your **e24V3** software, the new software is loaded into the **e24V3** via **CODELINK**. **CODELINK** is a communication program that runs on a PC based computer. The **CODELINK** cable connects the personal computer (PC) comm port to the **e24V3** Codelink connector which is located on the front control panel.

The **CODELINK** program together with full instructions can be downloaded from the LSC website, www.lsclighting.com or you can contact LSC or your LSC dealer.

14 COMPLIANCE STATEMENTS

14.1 C TICK COMPLIANCE STATEMENT

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.

14.2 CE COMPLIANCE STATEMENT

The **e24V3** Dimming System from LSC Lighting Systems (Aust) Pty. Ltd. has been designed and tested to the European Committee for Electrotechnical Standardization (CENELEC) standard– EN55022 (Information Technology Equipment).

14.3 PRODUCT OF AUSTRALIA

The **e24V3** Dimming System meets the requirement status “Product of Australia” as defined by the Australian Governments Trade Practises Act 1974, Section 65AC and administered by the Australian Made Campaign Limited (AMCL). All LSC manufactured products have virtually all their design, production and manufacture processes occur in Australia, thus qualifying for the highest status by the AMCL.

14.4 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. can not 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.