



REDBACK

12 Channel



INSTALLATION and OPERATION

Version 1.1

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1 Meet the Redback

The Redback is a compact, simple-to-operate small-system dimmer, with a range of sophisticated, big-system capabilities. It can be controlled by any DMX512 controller, or optionally, any standard MIDI sequencing device. It can be operated locally from the front panel to output a preset scene or run one of the built-in chase patterns.

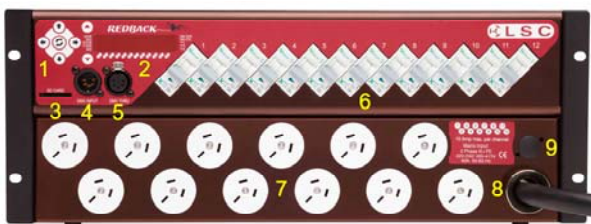
All control functions are combined on a basic *highest takes precedence basis*.

Redback can be powered from either a three phase or single phase supply.

Advanced capabilities include individual channel settings for fade curve, maximum and minimum output levels and MIDI and DMX control patching. All configuration options and front panel operations can also be controlled using the RDM (Remote Device Management) protocol.

1.1 Redback's Layout

Redback is a rack mounting device that occupies 2RU (88mm) in a standard 19" (484mm) equipment rack. The version with front mounted connectors occupies 4RU (180mm).



The front panel of all versions:

- 1 Control panel
- 2 LED display
- 3 SD Flash memory card slot
- 4 DMX512 Input connector
- 5 DMX512 Through socket
- 6 Load circuit breakers

On the rear panel of 2RU versions and the front panel of 4RU versions:

- 7 Load connectors
- 8 Power supply entry
- 9 MIDI IN socket (optional).

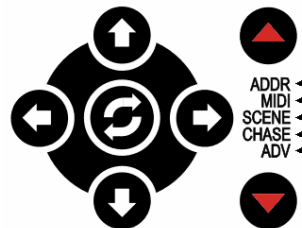
1.2 Power Supply

Redback can be powered from:

- ♦ Three phase supply of 208 - 415v at 50 - 60Hz of up to 40Amps per phase.
- ♦ Single phase supply of 100 - 240v at 50 - 60Hz of up to 75Amps

Safety Note: Conversion between three phase and single phase operation should only be undertaken by a suitably trained and qualified electrical technician.

1.3 Control Panel



All control and configuration operations on Redback are accessed using the five-button control pad and the Menu scroll keys.

The ← LEFT and RIGHT → arrow keys are used to step between the parameters being set in the selected function.

The ↑ UP and DOWN ↓ arrow keys are generally used to increase or decrease the values for the selected parameter.

The ↻ FLIP key is generally used to switch between text and graphical modes on the LED display.

The red MENU UP ▲ and MENU DOWN ▼ keys scroll between menu functions.

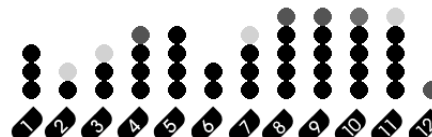
The menu LEDs ◀ indicate the currently active menu function.

1.4 LED Display

The LED panel has both text and graphical display modes.

DMX 13

Menu information is generally displayed as text.



Dimmer levels are displayed in graphical mode.



The status LEDs indicate the presence of the mains power supply and the health of the DMX512 data feed.

1.5 SD flash memory slot

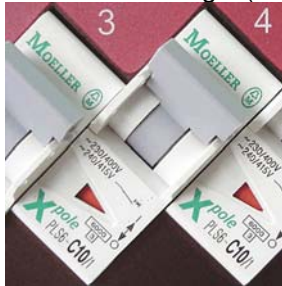
The card slot accepts standard full-size SD memory cards up to 2GB for loading firmware updates. MiniSD and microSD flash cards can be used when fitted into a standard SD adapter.



Note: The slot is not compatible with the SDHC (Secure Digital High Capacity) data format used in SD cards over 2GB.

1.6 Load Circuit Breakers

Each load circuit is protected by a 10amp miniature circuit breaker. For normal operation the circuit breaker lever should be in the up position, displaying a red indicator triangle (as illustrated).



The indicator triangle is green if the circuit breaker has been switched off or has tripped due to a fault.

1.7 DMX512 sockets

Redback is DMX512 (1990) or DMX512-A (E1-11) and RDM (E1-20) compliant, with standard XLR 5 pin **Input** and **Through** sockets.

1.8 Load sockets

The 4RU version of the Redback has the load sockets mounted on the front panel.

The 2RU version of the Redback has the load sockets mounted on the rear panel.

1.9 Power supply entry

To facilitate the installation of permanent wiring or flexible cable suitable for your specific requirements, Redback is supplied with a cable clamping grommet fitted to the supply entry point.

1.10 MIDI input (optional)

The standard 5 pin DIN MIDI IN (Musical Instrument Digital Interface) input socket allows any MIDI controller to set dimmer levels using note velocity values.

2 Installation

2.1 Mounting Options

Redback may be installed in different configurations to suit a range of applications.

2.1.1 Rack Mounting

The 2 RU versions of Redback are designed for installation in standard 19" equipment racks, touring cases, or rack sleeves, where access is available to both the front and rear of the rack cabinet.

The 4 RU versions are designed for installation in standard 19" equipment racks, touring cases, or rack sleeves, where access is available only from the front of the rack cabinet.

Each Redback should be fixed to the equipment rack by a minimum of four screws.

2.1.2 Wall Mounting

Reversing the side panels on 4RU versions allows the rack ears to be used as wall mounting brackets.

Each Redback should be fixed to the wall mounting frame by a minimum of four screws.

2.2 Electrical installation

2.2.1 Safety

All electrical work must be carried out by a suitably trained and qualified electrical technician.

2.2.2 Power Supply

The Redback dimmer must be fed from a suitably rated external circuit breaker.

In three phase installations the supply wiring and overload protection should be suitable for loads of up to 40 Amps per phase. The supply must be in "wye" or "star" configuration with a neutral connection.

Due to the large harmonic currents produced by all phase-controlled dimmers, it is recommended that the neutral cable should be rated to carry currents up to 75 Amps.

In single phase installations the supply wiring and overload protection should be suitable for the maximum rating of the fitted input cable, but should not exceed 75 Amps.

2.2.3 Load circuits

Load circuits should be suitable for loads of up to 10 Amps per dimmer channel.

The minimum channel loading for reliable smooth fading is a resistive load (incandescent lamp) of 250 milliamps. This is the equivalent of a 60 Watt lamp on a 220/240 Volt supply or 27.5 Watts on a 110/120 Volt supply.

2.3 Connecting DMX512 and RDM

DMX 512 (ANSI E1.11, DMX512-A) is the industry standard for the transmission of digital control signals between lighting equipment.

DMX is usually "looped" from one piece of equipment to the next.

If the RDM (ANSI E1.20 Remote Device Management) extensions to DMX 512 are to be used to configure or control the Redback, all distribution devices between the controller and the Redback must support bi-directional DMX 512 data.

Where a Redback dimmer is the last device on a DMX signal chain, the DMX standard requires that a termination device must be plugged in to the DMX **Through** socket.

See "DMX Explained and Typical Installations" for more information.

2.4 Connecting MIDI (optional)

The standard 5-pin DIN MIDI (Musical Instrument Digital Interface) input socket on the rear allows any MIDI controller to set dimmer levels using note velocity values.

As there is no MIDI **Thru** port on a Redback dimmer, it must be the last device in a MIDI control chain.

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

3 Fast Track Guide

Getting Redback Up and Running

- **Connect a power supply**

The Redback dimmer must be fed from a suitably rated external circuit breaker.

In three phase installations the supply wiring and overload protection should be suitable for loads of up to 40 Amps per phase. The supply must be in "wye" or "star" configuration with a neutral connection rated for currents up to 75 Amps.

When configured for three phase operation, the ~1 ~2 ~3 LEDs indicate the availability of the corresponding phase of mains supply. All three supply phases must be present for full operation of all dimmers.

In single phase installations the supply wiring and overload protection should be suitable for the maximum rating of the fitted input cable, but should not exceed 75 Amps.

When configured for single phase operation, input supply cabling is bridged and all three power LEDs illuminate if the mains supply is available.

- **Reset the system to default setup** (optional)

Note: Resetting the Redback clears all scene memories, sets all parameters (addresses, fade curves, scenes, times, minimum and maximum levels, etc) back to their default values.

To reset Redback, hold down the (white) **UP** and **DOWN** arrow keys during power up.

- **Connect the DMX512 control data**

DMX512 data is connected to the 5 pin DMX INPUT connector. If the RDM (ANSI E1) extensions to DMX 512 are to be used to configure or control the Redback, all distribution devices between the controller and the Redback must support bi-directional DMX 512 data.

If the Redback dimmer is the last device on a DMX signal chain, the DMX512 standard requires that a termination device must be plugged in to the DMX THRU socket.

- **Set the DMX512 address**

Use the red **MENU UP** and **MENU DOWN** keys to scroll to the Address [ADDR] menu function. This menu provides two methods for allocating the DMX address of the dimmers.

Direct Addressing

Direct DMX mode address allows the address of the first Redback dimmer to be set to any slot in the DMX universe where all dimmers can be allocated a valid address (Range 1-501).

DMX 181

In this screen:

The **LEFT** and **RIGHT** arrow keys switch between the Direct DMX Address and Bank Address modes

The **UP** and **DOWN** arrow keys increment and decrement the starting address.

Bank addressing

Bank mode allocates fixed blocks of addresses to the dimmers (see table 9). Selecting bank 1 allocates DMX addresses 1-12 to the Redback. Selecting bank 2 allocates DMX addresses 13-24, etc. (Range 1-42).

BANK26

In this screen:

The **LEFT** and **RIGHT** arrow keys switch between the Direct DMX Address and Bank Address modes

The **UP** and **DOWN** arrow keys increment and decrement the bank number.

- **Connect the loads**

Redback can smoothly dim loads ranging from 60 Watts to 2,400 Watts at 240 Volts, or 27.5 Watts to 1,100 Watts at 110 Volts (250 milliamps to 10 Amps).

- **Fade up the dimmers**

- **Read the manual** (RTFM)

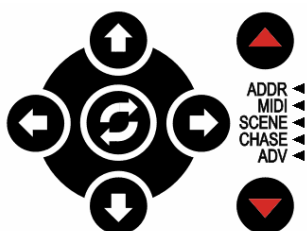
The Redback can do just about anything that you will ever want from a compact digital dimmer, but you'll never know how to get the most from it if you don't read the manual.

4 Menu System

4.1 Menu Structure

Redback has a two level menu system. The Basic menu provides access to those settings needed for general day-to-day use of the Redback in production. The Advanced menu gives access to configuration and operations options required for more complex operating environments, dimmer configuration and dimmer diagnostics.

4.2 Control Pad



All menu operations on Redback are accessed via the five-button control pad and the Menu scroll keys. The ← **LEFT** and **RIGHT** → arrow keys are used to step between the parameters being set in the selected function. The ↑ **UP** and **DOWN** ↓ arrow keys are generally used to increase or decrease the values for the selected parameter. The ↻ **FLIP** key is generally used to switch between text and graphical modes on the LED display. The red **MENU UP** ▲ and **MENU DOWN** ▼ keys scroll between menu functions.

4.3 Menu LEDs

The menu LEDs ◀ indicate the currently active menu function. A double flashing menu LED indicates that an option is active and overriding basic DMX control. The Advanced Menu [ADV] LED double-flashes to indicate that Advanced functions are overriding basic dimmer settings.

4.4 Status LEDs



4.4.1 DMX DATA

The DATA LED illuminates to indicate the presence of DMX512 data on the DMX INPUT connector. If the data signal is lost, the indicator double-flashes to indicate data failure. All dimmers will hold their current levels until data is restored or the Redback is powered down or re-set.

4.4.2 DMX ERR

The DMX Error LED flashes to indicate errors in the DMX512 data arriving at the DMX INPUT connector.

The problems that cause error indication include:

- a noisy DMX512 signal due to poor or damaged cables or connections, particularly if the shielding is not continuous or one of the signal pair is broken.
- damaged or incomplete data packets from a faulty DMX512 transmitter on a control console or a data splitter.

4.4.3 ~1 ~2 ~3 (Mains power)

The three power indicator LEDs illuminate to indicate the presence of the mains power supply to the Redback.

Three Phase Supply

When configured for three phase operation, the ~1 ~2 ~3 LEDs indicate the availability of the corresponding phase of mains supply. All three supply phases must be present for full operation of all dimmers.

Single Phase Supply

When configured for single phase operation, input supply cabling is bridged and all three power LEDs illuminate if the mains supply is available.

4.5 LED Screen

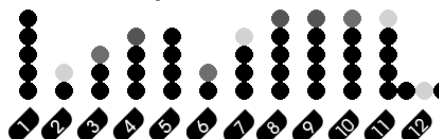
The LED panel has both text and graphical display modes.

4.5.1 Text Mode

ALL CH

Menu selections and settings are generally displayed as text.

4.5.2 Graphical Mode



Dimmer levels are displayed in graphical mode. This example shows:

Dimmer	1	2	3	4	5	6	7	8	9	10	11	12
Level	Fl	25	50	75	80	33	66	99	95	90	85	5

The height of the column indicates the level of the dimmer. The brightness of the topmost LED provides a finer level of indication.

Symbol	◐	◑	◒	◓
Level	~5%	~10%	~15%	~20%

The two additional LEDs on either side of the level for dimmer 12 indicate that dimmer 12 is the dimmer currently selected for adjustment.

4.6 Data Entry

Data entry in Redback is achieved using the arrow keys to step backwards and forwards through the possible values for the current setting.

4.6.1 Wrap around

Entry for many settings is wrap-around. Incrementing beyond the maximum value will step back to the minimum value and begin incrementing again (eg. Dimmer 10,11,12, 1, 2). Decrementing below the minimum value will step back to the maximum value and begin decrementing again (eg. Bank 3, 2, 1, 42, 41).

4.6.2 Single step entry

Values are changed by a single step with each press of the arrow key.

4.6.3 Multi step entry

Holding down the arrow key when setting values steps continuously through the available values until the limit is reached. The key must be released and re-pressed to wrap the value around. The longer a key is held down the faster the setting will step.

4.6.4 Jump to limit value

The limit value of a setting is selected with a "double-tap and hold for two seconds" action on the arrow key.

4.7 Power Up Display

On power up, the screen displays an LED test sequence that lights up each LED in the front panel, followed by a brief display of the version number of the software running on the dimmer. It then resumes the selected default screen.

4.8 Default Status Screen

The default status screen is displayed:

- after the Power Up sequence.
- following two minutes of menu inactivity.
- when the **MENU UP ▲** key is pressed from the Address menu.

There are two alternative status screens.

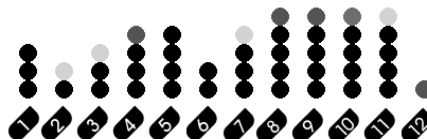
4.8.1 Text Default Status Screen

The text default screen displays the either: The DMX address of the first dimmer when set up in a continuous (1 to 1) sequence e.g.

```
DMX 42
or
DMX --
```

when the dimmers are soft patched to some other (non-linear) sequence.

4.8.2 Graphical Default Status Screen



The graphical default screen is a display of the current dimmer levels. The levels displayed are the sum of all control functions including, DMX input, all scenes, test levels, MIDI input, chase sequences, dimmer curves, highest and lowest level limits. Outputs are combined on a *highest-takes-precedence* basis. (ie. the levels from all sources are electronically combined so that only the highest level is controlling the dimmer.)

4.8.3 Changing the Default Screen

The **FLIP** key toggles between the text and graphical default screens. Your current selection becomes the new system default screen.

4.9 Locking the Menu system

The Redback menu system may be locked to prevent unauthorised access to the menus. When the menu system is locked, only the current default screen is displayed. Pushing any key will produce the screen message:

```
LOCKED
```

To lock the menu system, simultaneously press both the **LEFT** and **RIGHT** arrow keys. This will produce the 4 digit code entry screen:

```
0.0.0 0
```

In this screen:

The **LEFT** and **RIGHT** arrow keys move the selection cursor dots between digits. The **UP** and **DOWN** arrow keys increment and decrement the currently selected digit. The **FLIP** key records the current digits as the key for the lock and displays the word **LOCKED**.

4.10 Unlocking the Menu system

To unlock the menu system, simultaneously press both the **LEFT** and **RIGHT** arrow keys. This will produce the 4 digit code entry screen:

```
.0.0 0 0
```

In this screen:

The **LEFT** and **RIGHT** arrow keys move the selection cursor dots between digits. The **UP** and **DOWN** arrow keys increment and decrement the currently selected digit. The **FLIP** key submits the current digits as the key for the lock. If the submitted key code is correct, the screen displays the word **UNLOCKED** and activates the menu system. If the submitted key code is not correct, the screen displays the word **LOCKED** then returns to the locked default screen.

It is recommended that lock codes be easy to remember (eg. 1337 or 1991) but not obvious (eg. 0000 or 9999). Whatever you choose, to

avoid embarrassment, write it down *somewhere* for future reference.

4.11 Menu Structure

Basic Menu

Status Screen

ADDR	DMX Address setting
MIDI	MIDI Address settings
SCENE	Scene setting and operation
CHASE	Chase setting and operation
ADV	Enter the Advanced Menu System

Advanced Menu

SOFTP	Soft Patch - advanced DMX addressing.
CURVE	Fade curve selection
SNAP	Snapshot - DMX scene capture
SCN LV	Scene Levels - scene level setting
SCN TM	Scene Times - scene fade time setting
SCN RN	Scene Run - triggering scene fades
MIN LV	Minimum Levels - dimmer minimum level settings
MAX LV	Maximum Levels - dimmer maximum level settings
TEST	Dimmer testing
ABOUT	Software revision information
SETUP	Channel Setup - selection of 6 or 12 channel mode
RESET	Reboot system or Reset to System Defaults

5 Basic Menu

5.1 DMX Address Allocation [ADDR]

Sets the DMX512 addresses for Redback's dimmers.

Selecting this menu option displays the current DMX address of the first dimmer:

DMX 1

If dimmer addresses have been allocated from the Soft Patch [SOFTP] option of the Advanced Menus the display reads:

PATCHD

Allocating an address from this menu overrides the addresses set from the Soft Patch menu.

Levels set by DMX512 control are combined on a highest-takes-precedence basis with levels from the internal scene memories, the internal chaser and the optional MIDI interface.

In Basic operating mode, the dimmers are automatically allocated sequential addresses following the start address. (eg. If the start address is set to 4, then dimmer 1 will be allocated a DMX address of 4, dimmer 2 will be allocated an address of 5, dimmer 3 will be allocated an address of 6, etc).

This menu provides two methods for allocating the DMX address of the dimmers.

5.1.1 Direct DMX address

Direct DMX mode address allows the address of the first Redback dimmer to be set to any slot in the 512 slot DMX universe where all dimmers can be allocated a valid address (Range 1-501).

DMX 181

In this screen:

The ← **LEFT** and **RIGHT** → arrow keys switch between the Direct DMX Address and Bank Address modes

The ↑ **UP** and **DOWN** ↓ arrow keys increment and decrement the starting address.

5.1.2 Bank address

Bank mode allocates fixed blocks of addresses to the dimmers (see table). Selecting bank 1 allocates DMX addresses 1-12 to the Redback, selecting bank 2 allocates DMX addresses 13-24, etc. (Range 1-42).

BANK42

In this screen:

The ← **LEFT** and **RIGHT** → arrow keys switch between the Direct DMX Address and Bank Address modes

The ↑ **UP** and **DOWN** ↓ arrow keys increment and decrement the bank number.

DMX 512 start addresses for Redback 12 banks

Bank	1	2	3	4	5	6
Start Addr	1	13	25	37	49	61
Bank	7	8	9	10	11	12
Start Addr	73	85	97	109	121	133
Bank	13	14	15	16	17	18
Start Addr	145	157	169	181	193	205
Bank	19	20	21	22	23	24
Start Addr	217	229	241	253	265	277
Bank	25	26	27	28	29	30
Start Addr	289	301	313	325	337	349
Bank	31	32	33	34	35	36
Start Addr	361	373	385	397	409	421
Bank	37	38	39	40	41	42
Start Addr	433	445	457	469	481	493

5.2 MIDI Address Allocation [MIDI]

Sets the MIDI addresses for controlling Redback's dimmers.

Dimmers are controlled by Note-On, Note-Off and Velocity messages for a block of six adjacent MIDI Notes starting from the Channel and Note set from this menu.

Levels set by MIDI control are combined on a highest-takes-precedence basis with levels from DMX512, the internal scene memories and the internal chaser.

Selecting this menu displays the current MIDI Channel controlling the Redback dimmer or the current MIDI Note controlling dimmer 1.

In this screen:

The ← **LEFT** and **RIGHT** → arrow keys switch between:

- selecting the MIDI Channel

CH 1

- selecting the MIDI Note to control dimmer 1.

NOT 42

The ↑ **UP** and **DOWN** ↓ arrow keys switch between:

- setting the MIDI Channel number (Range 1-16).
- setting a Note number where all dimmers can be allocated to a valid Note (Range 0-122)

5.3 Scene Setting [SCENE]

Activates and sets a single static scene for situations where a control system is not available.

Levels set in this scene are combined on a highest-takes-precedence basis with levels from the advanced scene memories, DMX512 control, the internal chaser and the optional MIDI interface.

The Scene function is useful where some dimmers are required to be held at a fixed level independently of other control settings. Applications include dimming musician's lights, a follow spot, the spot on the lectern or important sponsor signage.
The default setting for the scene is off.

In this screen:
The **FLIP** key switches between text and graphical modes on the LED display.
The **LEFT** and **RIGHT** arrow keys step between:

- enabling and disabling scene output

OFF

- selecting each dimmer for setting

C 1 L42

or



- selecting all dimmers for setting.

ALL CH

or



The **UP** and **DOWN** arrow keys increase or decrease the selected dimmer or dimmers.
In **All Channel** mode, each dimmer increments or decrements by the same amount, regardless of its starting level.

5.3.1 SCENE Menu LED

If the scene is active, the **SCENE** menu LED gives a short double-flash when Redback is displaying the default status screen.

5.4 Chase Mode [CHASE]

Activates and controls the internal chase effects generator.
Redback has six inbuilt chase effects patterns (c1 - c6) that may be varied in replay speed between 10 and 900 beats (steps) per minute.
Levels generated in chase effects are combined on a highest-takes-precedence basis with levels from scene memories, DMX512 control and the optional MIDI interface.
The Chase generator is useful where a repeated pattern of lights is needed without requiring an external control system.
Applications include displays, signage and parties.

In this screen:
The **LEFT** and **RIGHT** arrow keys step between:

- enabling and disabling chase effects.

OFF

- selecting the current chase effect.

c3B440

The **UP** and **DOWN** arrow keys increase or decrease the speed of the effects generator in steps of 10 beats per minute.(Range 10 - 900). This value is not wrap-around.
The **FLIP** key switches between text and graphical modes on the LED display.

5.4.1 Chase effects patterns

c1 - single channel

Step	Channels											
1	☉	•	•	•	•	•	•	•	•	•	•	•
2	•	☉	•	•	•	•	•	•	•	•	•	•
3	•	•	☉	•	•	•	•	•	•	•	•	•
4	•	•	•	☉	•	•	•	•	•	•	•	•
5	•	•	•	•	☉	•	•	•	•	•	•	•
6	•	•	•	•	•	☉	•	•	•	•	•	•
7	•	•	•	•	•	•	☉	•	•	•	•	•
8	•	•	•	•	•	•	•	☉	•	•	•	•
9	•	•	•	•	•	•	•	•	☉	•	•	•
10	•	•	•	•	•	•	•	•	•	☉	•	•
11	•	•	•	•	•	•	•	•	•	•	☉	•
12	•	•	•	•	•	•	•	•	•	•	•	☉

c2 - add then subtract

Step	Channels											
1	☉	•	•	•	•	•	•	•	•	•	•	•
2	☉	☉	•	•	•	•	•	•	•	•	•	•
3	☉	☉	☉	•	•	•	•	•	•	•	•	•
4	☉	☉	☉	☉	•	•	•	•	•	•	•	•
5	☉	☉	☉	☉	☉	•	•	•	•	•	•	•
6	☉	☉	☉	☉	☉	☉	•	•	•	•	•	•
7	☉	☉	☉	☉	☉	☉	☉	•	•	•	•	•
8	☉	☉	☉	☉	☉	☉	☉	☉	•	•	•	•
9	☉	☉	☉	☉	☉	☉	☉	☉	☉	•	•	•
10	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•	•
11	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
12	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉
13	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
14	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
15	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
16	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
17	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
18	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
19	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
20	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•
21	☉	☉	☉	•	•	•	•	•	•	•	•	•
22	☉	☉	•	•	•	•	•	•	•	•	•	•
23	☉	•	•	•	•	•	•	•	•	•	•	•
24	•	•	•	•	•	•	•	•	•	•	•	•

c3 - single channel shadow

Step	Channels											
1	•	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉
2	☉	•	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉
3	☉	☉	•	☉	☉	☉	☉	☉	☉	☉	☉	☉
4	☉	☉	☉	•	☉	☉	☉	☉	☉	☉	☉	☉
5	☉	☉	☉	☉	•	☉	☉	☉	☉	☉	☉	☉
6	☉	☉	☉	☉	☉	•	☉	☉	☉	☉	☉	☉
7	☉	☉	☉	☉	☉	☉	•	☉	☉	☉	☉	☉
8	☉	☉	☉	☉	☉	☉	☉	•	☉	☉	☉	☉
9	☉	☉	☉	☉	☉	☉	☉	☉	•	☉	☉	☉
10	☉	☉	☉	☉	☉	☉	☉	☉	☉	•	☉	☉
11	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•	☉
12	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	•

c4 - single channel sweep

Step	Channels											
1	☉	•	•	•	•	•	•	•	•	•	•	•
2	•	☉	•	•	•	•	•	•	•	•	•	•
3	•	•	☉	•	•	•	•	•	•	•	•	•
4	•	•	•	☉	•	•	•	•	•	•	•	•
5	•	•	•	•	☉	•	•	•	•	•	•	•
6	•	•	•	•	•	☉	•	•	•	•	•	•
7	•	•	•	•	•	•	☉	•	•	•	•	•
8	•	•	•	•	•	•	•	☉	•	•	•	•
9	•	•	•	•	•	•	•	•	☉	•	•	•
10	•	•	•	•	•	•	•	•	•	☉	•	•
11	•	•	•	•	•	•	•	•	•	•	☉	•
12	•	•	•	•	•	•	•	•	•	•	•	☉
13	•	•	•	•	•	•	•	•	•	•	•	☉
14	•	•	•	•	•	•	•	•	•	•	☉	•
15	•	•	•	•	•	•	•	•	☉	•	•	•
16	•	•	•	•	•	•	•	☉	•	•	•	•
17	•	•	•	•	•	☉	•	•	•	•	•	•
18	•	•	•	•	☉	•	•	•	•	•	•	•
19	•	•	•	☉	•	•	•	•	•	•	•	•
20	•	•	☉	•	•	•	•	•	•	•	•	•
21	•	•	•	☉	•	•	•	•	•	•	•	•
22	•	☉	•	•	•	•	•	•	•	•	•	•
23	☉	•	•	•	•	•	•	•	•	•	•	•
24	•	•	•	•	•	•	•	•	•	•	•	•

Key to symbols

Level	Symbol
0%	•
25%	☉
50%	☉
100%	☉

In chase patterns 1 to 5, the dimmer channels are either on or off. In chase pattern 6, the smooth rolling wave is produced by fading the channels fade up and down at the same rate as the chase steps.

5.4.2 CHASE Menu LED

If the chase is active, the CHASE ◀ menu LED gives a short double-flash when Redback is displaying the default status screen.

c5 - duplicated single channel

Step	Channels											
1	☉	•	•	•	•	•	☉	•	•	•	•	•
2	•	☉	•	•	•	•	•	☉	•	•	•	•
3	•	•	☉	•	•	•	•	•	☉	•	•	•
4	•	•	•	☉	•	•	•	•	•	☉	•	•
5	•	•	•	•	☉	•	•	•	•	•	☉	•
6	•	•	•	•	•	☉	•	•	•	•	•	☉

c6 - mexican wave

Step	Channels											
1	☉	☉	☉	•	•	•	•	•	•	•	☉	☉
2	☉	☉	☉	☉	•	•	•	•	•	•	•	☉
3	☉	☉	☉	☉	☉	•	•	•	•	•	•	•
4	•	☉	☉	☉	☉	☉	•	•	•	•	•	•
5	•	•	☉	☉	☉	☉	☉	•	•	•	•	•
6	•	•	•	☉	☉	☉	☉	☉	•	•	•	•
7	•	•	•	•	☉	☉	☉	☉	☉	•	•	•
8	•	•	•	•	•	☉	☉	☉	☉	☉	•	•
9	•	•	•	•	•	•	☉	☉	☉	☉	☉	•
10	•	•	•	•	•	•	•	☉	☉	☉	☉	☉
11	☉	•	•	•	•	•	•	•	☉	☉	☉	☉
12	☉	☉	•	•	•	•	•	•	•	☉	☉	☉

6 Advanced Menu

The advanced menus provide access to system settings and functions not required for general operation of Redback.

6.1 Accessing the Advanced Menus [ADV]

To enter the Advanced Menu system requires holding down the **U FLIP** key for two seconds. The display changes to show the Soft Patch menu **SPATCH**, when the Advanced Menu system is available.

6.2 Soft Patch

SPATCH

The Soft Patch option allows any dimmer to be allocated to any address in the DMX universe (including the possibility of multiple dimmers sharing the same DMX address).

The **RIGHT** → arrow key activates the menu option and displays the current soft patch mode of the dimmers.

If DMX channel allocation has been set from the Basic [ADDR] sequential address option, the screen will display:

1 TO 1

If dimmer addresses have been allocated from the soft patch option, the display reads:

PATCHD

In this screen:

The **UP** ↑ and **DOWN** ↓ arrow keys switch DMX addressing between the Basic sequential and Advanced soft patch modes.

The **LEFT** ← and **RIGHT** → arrow keys step between:

- displaying the current address mode

1 TO 1

- selecting a dimmer for addressing

2 0181

In the address screen:

The **UP** ↑ and **DOWN** ↓ arrow keys increment and decrement the DMX address allocated to the selected dimmer (Range 1-512).

Soft patched address allocations are retained in system memory, irrespective of Redback's current address mode.

6.3 Fade Curve Selection

CURVE

The Fade Curve menu enables selection of the relationship between the input control signal and the actual dimmer output. Each of the available fade curves produces a different response from the dimmer as the channel is faded up and down.

6.3.1 S Law Curve

SCU

The S law curve is the standard dimming curve found on the majority of electronic dimmers in current use. It is favoured in live applications because its "S" shape gives plenty of gentle adjustment at the bottom and top ends of the channel fader where subtle fades are important, and a rapid rise in the middle of the fader. (This is the default curve for Redback.)

6.3.2 Square Law

SQU

The square law curve produces a linear power output as the fader level increases. It comes on rapidly at the bottom end but rises more gently after 25% on the fader, a characteristic that matches the light response of many video camera systems.

6.3.3 120 Volt

120

The 120 Volt curve is intended for powering 120V lamps from a 240V mains supply. It follows the pattern of the standard S law curve, but limits the output to 120 Volts when the control signal is at Full.

Warning:

A Total Reset, sets all dimmers to the default S law curve (SCU). This could result in 240 Volts being fed to 120 Volt lamps.

6.3.4 Switching loads On and Off

Redback has two curves for switching loads directly between ON and OFF. These curves are useful for controlling loads that don't take kindly to being dimmed, such as motors or discharge lamps.

6.3.5 Non Dim

NON

The Non Dim curve is for use when a load needs to be switched during a fade cue. The load is switched ON when the dimmer level goes above 60% and switched OFF when the dimmer level falls below 40%.

6.3.6 Relay

RLY

The Relay curve is for use when a load needs to be switched at the beginning or end of a fade cue.

The load is switched ON when the dimmer level goes above 4% and switched OFF when the dimmer level falls below 2%.

The **RIGHT** → arrow key activates the Curve menu and displays the currently selected dimmer and its assigned fade curve.

C1 SCU

In this screen:

The **← LEFT** and **RIGHT →** arrow keys select the dimmer for curve assignment (Range 1-6).

The **↑ UP** and **DOWN ↓** arrow keys allocate the fade curve (Range SCU, SQR, NON, RLY, 120).

The [ADV] menu indicator LED double-flashes in the default status screen if any dimmer is set to a curve other than the default S Curve (SCU).

6.4 Redback's Advanced Scenes

The advanced scene system has six scene memories that can be either set manually or captured from the DMX control signal, and played back with defined fade times.

The [ADV] menu indicator LED double-flashes in the default status screen if any scene is active.

6.5 Capturing a DMX Snapshot

SNAP

The Snapshot option allows the dimmer levels set by the current DMX data to be captured into a scene memory. The stored scene will contain only levels from the DMX input, ignoring dimmer levels originating from scene memories, the chase generator or dimmer maximum and minimum settings. If the DMX signal has been disconnected (DMX DATA LED flashing), the snapshot will store the levels from the last DMX signal received.

The **RIGHT →** arrow key activates the menu option and displays the current scene memory.

In this screen:

The **← LEFT** and **RIGHT →** arrow keys select the current scene (Range 1-6).

SCN1

The **↑ UP** and **DOWN ↓** arrow keys both trigger the capture of the DMX snapshot:

-SNAP-

6.6 Setting Scene Levels

SCN LV

The Scene Levels option enables the levels in the stored scenes to be modified.

The **RIGHT →** arrow key activates the menu option and displays the current scene memory.

SCN3

In this screen:

The **↻ FLIP** key switches between text and graphical modes on the LED display.

The **← LEFT** and **RIGHT →** arrow keys step between:

- displaying the current scene number

SCN4

- selecting each dimmer for setting

C 1 L42

or



- selecting all dimmers for setting.

ALL CH

or



The **↑ UP** and **DOWN ↓** arrow keys step between:

- selecting the current scene for editing (Range 1-6)
- increasing or decreasing the level of the selected dimmer or dimmers.

In **All Channel** mode, each dimmer increments or decrements by the same amount, regardless of its starting level.

6.6.1 Excluded Mode

By setting a dimmer channel into Excluded mode from the Scene Levels menu, the scene's settings will have no effect on the existing level of that dimmer during scene replay.

6.6.2 Entering Excluded mode

When a dimmer level is at zero, the **DOWN ↓** arrow key sets the dimmer into Excluded mode. The **↑ UP** arrow key exits from Excluded mode.

C 3 EXC

In the graphical display, an excluded dimmer is indicated by a single dot at the top of its level column.



6.7 Setting Scene Fade Times

SCN TM

The Scene Time menu sets the fade time for transition to and from the recorded scenes.

The **RIGHT →** arrow key activates the menu option and displays the current scene memory.

SCN3

In this screen:

The **← LEFT** and **RIGHT →** arrow keys step between:

- displaying the current scene number

SCN4

- displaying the fade time for the current scene.

The **↑ UP** and **DOWN ↓** arrow keys step between:

- selecting the current scene (Range 1-6)
- increasing or decreasing the fade time for the selected scene (Range 0-335,544 seconds).

T4.2s

The default fade time for all scenes 1.0 seconds.

6.8 Running a Scene

SCN RN

The Scene Run menu enables the activation and deactivation of the recorded scenes.

When activated, a scene fades up in the set fade time.

When deactivated the scene fades down in the set fade time

The **RIGHT** → arrow key activates the menu option and displays the currently selected scene.

SCN3

In this screen:

The **FLIP** key switches between text and graphical modes on the LED display.

The **LEFT** ← and **RIGHT** → arrow keys step between:

- displaying the selected scene number

SCN4

- displaying the status of the selected scene

OFF

The **UP** ↑ and **DOWN** ↓ arrow keys step between:

- selecting the current scene (Range 1-6)
- activating and deactivating the selected scene

ON

The [ADV] menu indicator LED double-flashes in the default status screen if any scene is active.

6.9 Setting Minimum Dimmer

Levels

MIN LV

The Minimum Level menu sets the level of the dimmer output when the control signal is set to zero. Setting this value slightly above zero is useful to "Pre-Heat" lamp filaments where a rapid fade up is required.

The **RIGHT** → arrow key activates the menu and displays the currently selected dimmer.

C 1 LD

In this screen:

The **LEFT** ← and **RIGHT** → arrow keys select the dimmer for adjustment.

The **UP** ↑ and **DOWN** ↓ arrow keys increase and decrease the minimum level for the selected dimmer.

The default minimum for all dimmers is Zero.

The [ADV] menu indicator LED double-flashes in the default status screen if any dimmer is set to a minimum above Zero.

6.10 Setting Maximum Dimmer

Levels

MAX LV

The Maximum Level menu sets the highest possible level of dimmer output when its control signal is set to maximum.

Setting this value to slightly less than full mains voltage has little impact on light output from most lamps, but gives a significant increase in the operational life the lamp.

Setting the maximum to zero effectively locks the dimmer out of use. (But make a note so you won't be wondering why the dimmer isn't working next time you need to use it.)

The **RIGHT** → arrow key activates the menu and displays the currently selected dimmer.

C 1 FL

In this screen:

The **LEFT** ← and **RIGHT** → arrow keys select the dimmer for adjustment.

The **UP** ↑ and **DOWN** ↓ arrow keys increase and decrease the maximum level for the selected dimmer.

The default maximum for all dimmers is Full. The [ADV] menu indicator LED double-flashes in the default status screen if any dimmer is set to a maximum below Full.

6.11 Testing the Dimmers

TEST

The test menu allows each dimmer to be tested independently of all other functions. The dimmer under test responds only to the level set from test function.

The **RIGHT** → arrow key activates test mode and displays the current dimmer under test.

C 1 L42

In this screen:

The **LEFT** ← and **RIGHT** → arrow keys select the dimmer under test. The currently set test level is applied to the dimmer under test.

The **UP** ↑ and **DOWN** ↓ arrow keys increase and decrease the level of the selected dimmer.

Exiting from the test menu disables test mode.

6.12 About Redback

ABOUT

The About menu displays information about the firmware running in the Redback.

The **RIGHT** → arrow key activates the menu and displays:

Redback

In this screen:

The **LEFT** ← and **RIGHT** → arrow keys display the release number of the current firmware and other information to identify the dimmer's operating system.

RX.X

The Release number may be used to determine if a new firmware update is available from the Downloads area of the LSC web site at www.lscighting.com.

6.13 Setup

SETUP

Setup enables the Redback operating system to toggle between 6 and 12 channel modes.

Setting a 12 channel Redback to six channel mode will disable dimmers 3, 4, 7, 8, 11 and 12, and may also cause unpredictable behaviour in DMX addressing, Chase patterns and Fade Curves.

Changing channel mode resets all parameters (addresses, curves, scenes, times, minimum and maximum levels, etc) back to their default values

In this screen:

The **RIGHT** → arrow key enables changing the channel mode.

12Ch

The **FLIP** key initiates the mode change process and checks for confirmation:

6Ch ?N

The **UP** and **DOWN** arrow keys toggle between **Y** and **N**.

If the confirmation is set to **Y**, pressing the **FLIP** key changes channel mode then triggers a Total Reset.

wait..

6.14 Resetting Redback

RESET

The Reset menu provides two levels of reset.

6.14.1 System Reset (SYSRST)

Shuts down and restarts (reboots) the Redback. All levels and memories are retained and

restored after system restart. This is the equivalent of switching the power to Redback off, then on again.

6.14.2 Total Reset (TOTRST)

Shuts down Redback and sets all parameters (addresses, curves, scenes, times, minimum and maximum levels, etc) back to their default values, then restarts. This is the equivalent of switching the power to Redback off, then switching on again while holding down the **UP** and **DOWN** arrow keys.

The **RIGHT** → arrow key activates the Reset menu.

In this screen:

The **LEFT** and **RIGHT** arrow keys toggle between System Reset (SYSRST) and Total Reset (TOTRST).

The **FLIP** key initiates the reset process and checks for confirmation:

SURE?N

The **UP** and **DOWN** arrow keys toggle between **Y** and **N**.

If the confirmation is set to **Y**, pressing the **FLIP** key triggers the reset process.

wait..

Warning:

A Total Reset, sets all dimmers to the default S law curve (SCL). This could potentially result in 240 Volts being fed to 120 Volt lamps.

7 DMX 512 Explained

DMX512/ 2003-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 Redback dimmer has a "SPatch" (softpatch) menu that allows you to patch (connect) each DMX slot (address) from your lighting controller to a Redback dimmer channel number.

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 Redback uses a high impedance DMX input circuit allowing you to loop the DMX signal from

one Redback to the next. The last Redback in the chain will automatically terminate the DMX line if no cable is plugged in to the **Thru** socket.

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 some simple setups utilising DMX512.

7.1 Typical DMX Installations

In the following example, the DMX output signal from the lighting control desk is fed to the DMX connector of the first Redback dimmer. The DMX cable is then looped to the following Redback dimmers. The order of the daisy chaining is not important as each Redback 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.

8 Specifications

8.1 Mechanical Specifications

Chassis style		2RU Rack mount with rear outlets	4RU Rack mount or wall mount with front outlets
Dimensions (mm)	Width	484mm	484mm
	Height	88mm	180mm
	Depth	288mm	288mm
Weight (kg)		14kg	15kg
Construction		Made from aluminium and corrosion resistant steel finish in powder coat with polycarbonate labels.	

8.2 Technical Specifications

Number of Dimmer channels	12
Channel output rating	10 Amps (at 25°C ambient temp)
Three phase current requirements (per phase)	40 Amps
Minimum Resistive Load (Incandescent)	250 milliamps (60 Watts at 240 Volts or 27.5 Watts at 110 Volts)
Channel MCB type	1 Pole DIN style Electro-magnetic
Channel MCB breaking capacity	6000 Amps
Dimmer curve selection per channel	Yes
Memory storage	No (future development)
Power switching component	Triac
Inductor rise time (peak to peak)	100µs
Control protocol	DMX512 (1990) or DMX512-A (E1-11) with RDM (E1-20)
Channel output mimic LEDs	Yes
DMX Data LEDs	Yes
Operational STATUS indicator LED	Yes
Number of cooling fans	2
Fan cooling control	Variable
External software upgradeable	Yes
50/60Hz frequency Auto-select	Yes

9 Software (Firmware) Upgrades

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

The software version of your Redback is momentarily displayed on the LCD screen at power up and on the ABOUT option screen in the Advanced Menu system. The latest version of Redback software can be downloaded from the LSC web site, www.lscighting.com

9.1 Upgrading Redback's Firmware

Upgrading the firmware resets all parameters (addresses, curves, scenes, times, minimum and maximum levels, etc) back to their default values.

To upgrade the firmware:

- Check the current release number from the ABOUT screen in the Advanced Menu system.
- Check that a newer version is available from the Downloads area at the LSC Lighting Systems web site www.lscighting.com.
- Download the new firmware file.
- Unpack the **.prg** file from the downloaded archive and copy it into the **top level** (root) directory of a 2GB or smaller SD flash memory card. Do not rename the file.
- Insert the SD flash card into the slot on the front panel of the dimmer.
- Power up the Redback while holding down both the red **MENU UP ▲** and **MENU DOWN ▼** keys.
- The display flashes and counts through a file checksum up to **CS 100%** then the program data up to **PG 100%**
- Redback then reboots and displays the new firmware release version before continuing with normal operations.

10 Compliance Statements

10.1 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.

10.2 CE Compliance Statement

The Redback Dimmer 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).

10.3 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.