

# Software Release Note

RD-002-05



**LSC Electronics Pty. Ltd.**

**Research and Development**

**Project Details: ePAK/ePRO/iPAK/iPRO/e24/e1220**

**Project Title: eDim family software Release Note**

Written by : Gary Pritchard / Voytek Szapirko  
Created : 15 May 2000  
Last Modified : 15 May 2012

This document is a cumulative list of bug fixes and feature enhancements for generic eDIM family of firmware. This family of software is common for the ePAK, ePRO, e24, iPAK, iPRO and e1220 range of dimmers.

Files comprising this release are:

edimv147.bk3	For use with the CodeLink upgrade program
epak_b+a_v147.s19	Binary image for direct programming of the bootloader and application code into a flash prom using a prom programmer

*Please see Appendix A at the end of this document for details on how to upgrade the software.*

## Reporting Bugs

If you find a bug, or feel that we could improve the dimmer then please let us know. If you find a bug that affects operation or crashes the dimmer then could you let us know ASAP!!

email techSupport@lsclighting.com.au  
fax +61 3 9702 8000  
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## Obtaining Updates

If you wish to be emailed eDIM updates as they are released then send an email to the above address and you will be added you to the mailing list.

## Release 1.47      Date: 4 May 2012

**Reason for the Release:** Bug Fixes

**Bug Fixes:** Over Temperature (alarm and output control) does not work when FAN forced to ON from the UI.

**Solution(s):** This version fixes this problem.

**Features Upgraded:** None

## Release 1.46      Date: 13 August 2009

**Reason for the Release:** Bug Fixes

**Bug Fixes:** E24v1 slave (channels 13-24) will fail after CodeLink code upgrade.

**Solution(s):** This version (new FPGA code) fixes this problem.

**Features Upgraded:** None

## Release 1.45      Date: 16 July 2009

**Reason for the Release:** Bug Fixes



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**Bug Fixes:** DMX errors on some FPGAs  
**Solution(s):** This version (new FPGA code) fixes this problem.

**Features Upgraded:** None

### **Release 1.43      Date: 16 June 2009**

**Reason for the Release:** Bug Fixes  
**Bug Fixes:** E24v1 reports phase error (on phases 2A 2B and 2C) when DMX connected  
**Solution(s):** This version (new FPGA code) fixes this problem.

**Bug Fixes:** when the "ALL" channels is selected in Channel mode, then the user interface mode is changed to Address, all channels are driven to full.  
**Solution(s):** This version fixes this problem.

**Features Upgraded:** None

### **Release 1.42      Date: 18 July 2008**

**Reason for the Release:** Bug Fix  
**Bug Fixes:** Output flicker when receiving DMX on some CPU cards at very low temperatures (5° C and below)

**Solution(s):** This version (new FPGA code) fixes this problem.

**Features Upgraded:** None

### **Release 1.41      Date: 25 June 2008**

**Reason for the Release:** Bug Fix  
**Bug Fixes:** DMX detection corrected and now relies on received messages rather than break being present.

**Features Upgraded:** None

### **Release 1.40      26 September 2007**

**Bug Fixes:**  
**Symptom:** DMX error LED indicates bad packets when receiving good DMX (see Release 1.39)  
**Solution(s):** This version fixes this problem.  
Now the DMX reception is correct and the output is fluctuation/flicker free.

**Symptom:** DMX address was not cleared to factory default (DMX=1) when total reset was performed.  
**Solution(s):** This version fixes this problem.



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## **Release 1. 39      26 July 2007**

### **Bug Fixes:**

**Symptom:** The dimmer output fluctuates/flickers at some levels. Especially noticeable on low wattage lights at low levels. The problem was introduced when new version of FPGA code was compiled in version 1.34 to fix DMX Error LED intermittently blinking

**Solution(s):** This version reverts back to FPGA code version prior to 1.34, which unfortunately has a known DMX Error LED problem. There is no observable impact on the dimmer output.

## **Release 1. 38      14 December 2006**

### **Bug Fixes:**

**Symptom:** Phase fail reporting does not work

**Solution(s):** Recently introduced software bug has been fixed

## **Release 1. 37      12 December 2006**

### **Bug Fixes:**

**Symptom:** The new fan (due to sourcing problems of the existing fan), will not start up reliably at low speeds.

**Solution(s):** Every time the fan speed changes from zero to some other value (i.e. fan starts up), the fan is driven at full speed for 1s to ensure proper spin-up, and then it reverts to the desired speed.

## **Release 1. 36      4 August 2006**

### **Bug Fixes:**

**Symptom:** With a soggy or very bad Neutral the dimmer could lock up showing that all phases had failed. The only way to get it out of this state was to do a reset or power cycle.

**Problem:** Errors generated by a bad neutral could fool the dimmer into thinking that it was operating off 60Hz.

**Solution(s):** The frequency of operation is now checked when reinstating a failed phase.

## **Release 1. 35      24 August 2005**

### **Bug Fixes: None**

1.1.1 Revised Features

- Special 3 channel version for a customer.

## **Release 1. 34      4 April 2005**



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**Bug Fixes:**

**Symptom:** DMX error would occur and the DMX Error LED would flicker on some units.

**Problem:** New batch of the XILINX FPGA devices highlighted existing timing problem. The FPGA code was recompiled using more recent tools (with better optimisation algorithms).

**Solution(s):** This release corrects this problem.

**Release 1.33      7 June 2004**

**Bug Fixes:**

**Symptom:** When non-dim curve selected, the dimmer will still dim between 40% and 60%.

**Problem:** Software bug introduced in Release 1.27

**Solution(s):** This release corrects this problem.

1.1.2    Revised Features

- The outputs will fade to the stored scene on 'no DMX' at power up when the default scene is enabled in addition to fading to the default scene on 'DMX loss'. See notes below for details.

**Release 1.32      9 October 2003**

**Bug Fixes: None**

1.1.3    Revised Features

- ability to fade to the stored scene on 'DMX loss' has been added. The default is not to fade to the scene but to hold the last DMX levels.  
This mode is entered by:
  1. Ensure dimmer is in drive mode. That is the Drive LED is on.
  2. Push and hold the Up and Down keys together for at least 5 seconds.
  3. When display shows "Sys Reset" Push the decrement (down) key. (means no)
  4. When display shows "Total Reset" Push the decrement (down) key.
  5. When display shows "UI Loc" Push the decrement (down) key.
  6. The display will now show "enable default scene". Pushing the increment (up) key will now enable the default scene on loss of DMX.
  7. Program the scene you want the dimmer to fade to on loss of DMX. See manual for details.
  8. To turn off this feature, repeat steps 1-6 above. However, in this case the message "disable default scene" will be displayed. It is not necessary to clear the scene.
- when UI-Locked is activated it remains locked even after power has been cycled.

**Release 1.31      24 September 2002**

**Bug Fixes:**

**Symptom:** The dimmer flickers/dims at random. The problem is more apparent when the dimmer DMX address is set to a higher value.

**Problem:** DMA read and write cycles caused the FPGA UART to lose ONE DMX byte. This affected the rest of the packet by shifting it down by one DMX address.

**Solution(s):**

- circuitry was added (in the FPGA) to corrects this problem.



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- Note that this update will take twice as long as normal to load. This is because the problem lies not in the software but in the FPGA code. Thus this release loads both the operational code and the FPGA code.

### 1.1.4 Revised Features

There are no revised features in this release.

## **Release 1. 30      26 July 2002**

**Bug Fixes:** No bug fixes

### 1.1.5 Revised Features

Temperature threshold for the fan control on the ePRO and iPRO has been reduced from 50degC to 40degC

## **Release 1. 29      12 April 2002**

**Bug Fixes:**

**Symptom:** There are no known symptoms of this error.

**Problem:** The previous version was generated with the incorrect payload for the boot loader due to a batch file fault. This meant that in cases where a version of boot code less than V1.25 was detected the incorrect boot payload would be loaded into the dimmer. We believe that there should be no side effects from this mistake however we suggest that V1.28 is destroyed and V1.29 used instead. Loading V1.29 onto a dimmer that has had V1.28 previously loaded onto it will correct the problem.

**Solution(s):**

- The correct boot code was placed in the payload.

## **Release 1. 28      8 April 2002**

**Bug Fixes:**

**Symptom:** The dimmer dips at random intervals for a brief period. A phase failure can be seen on the display although it generally lasts for only a fraction of a second.

**Problem:** This bug is related to internal timing of functions. As it is a random event it is extremely hard to reproduce.

**Solution(s):**

- Code was optimised and function timing changed to eliminate the fault.

### 1.1.6 Revised Features

There are no revised features in this release.

## **Release 1. 27      5 April 2002**

**Bug Fixes:**

**Symptom:** The dimmer flashes erratically when running single phase.

**Problem:** Bug in timing causing a clash between the phase interrupt and the 3mS-update routines. This caused the dimmer to think it had a phase failure. It would then fail the phase, wait, check the phase again, determine that it was OK and then restart the phase handler. The clash would happen again and the process would repeat causing the lights to flash off and on repeatedly.



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Note that this problem is only applicable to releases 1.20 -> 1.26.

### Solution(s):

- Both the phase handler and the 3mS interrupt were calling the 3mS-routines. The phase handler was changed to prevent the interrupt if it was indeed going to handle it.

1.1.7 Revised Features

There are no revised features in this release.

## Release 1. 26      18 Jan 2002

### Bug Fixes:

**Symptom:** On issue C2 CPU card only, DMX address gets reset back to 1, after two successive power ups.

**Problem:** Bug in the EEPROM memory layout, DMXAddress location and SceneMode location were overlapping when a mask of 0x3f was applied in the EEWrite function.

### Solution(s):

- This release corrects this problem.

1.1.8

1.1.9 Revised Features

There are no revised features in this release.

## Release 1. 25      09 May 2001

### Bug Fixes:

**Symptom:** eLINK download will not work with e24. The dimmer will report slave error and proceed with normal operation.

**Problem:** Software bug introduced in Release 1.23

### Solution(s):

- This release corrects this problem.

1.1.10

1.1.11 Revised Features

There are no revised features in this release.

## Release 1. 24      09 April 2001

### Bug Fixes:

**Symptom:** eLINK will not work with CPU cards ISSUE C2 ONLY. The dimmer will lockup when eLINK attempts to establish communication with the dimmer.

**Problem:** The DONE signal from the Xilinx is not inverted on issue C2 CPU cards, and therefore the SIO0 send routine will wait 'forever' for the CTS signal.

### Solution(s):

- This release corrects this problem by disabling the SIO0 for all dimmers other than e24, this includes all issue C2 CPU cards as they do not support 24 channel mode.

1.1.12

1.1.13 Revised Features

There are no revised features in this release.



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## **Release 1. 23      04 April 2001**

### **Bug Fixes:**

**Symptom:** eLink will not work with CPU cards fitted with 33Mhz CPU.

**Problem:** The faster part is more prone to noise spikes .

**Solution(s):**

- This release corrects this problem by running the CPU in low EMI Mode.
- It has also been observed that holding the 'DEC' key during upgrade, can help. Once the upgrade is completed this will not be required for future upgrades.

**Symptom:** Any channel with drive level set above zero, will temporarily drive to 100% while going through System Reset or Total Reset

**Problem:** The Xilinx part is still running while the CPU resets.

**Solution(s):**

- This release corrects this problem by stoping the Xilinx part before proceeding with reset.
- If an upgrade cannot be done immediately, set all channel drive to zero, than proceed with reset.

**Symptom:** DMX address bank message will not show correctly, bank numbers with the last digit being a zero. The actual DMX address and DMX address display are correct.

**Problem:** The string is being incorrectly formatted.

**Solution(s):**

- This release corrects this problem.

**Symptom:** It is possible for the display to get corrupted when a Phase Fail message appears while another message is scrolling on the display.

**Problem:** Message priority-handling error.

**Solution(s):**

- This release corrects this problem.
- If an upgrade cannot be done immediately, manually invoking another message on the display will clear the erroneous display (eg Select Key).

**Symptom:** On a six-channel version (iPRO/ePRO), Curve channel numbers do not work correctly. Channels 4, 5 and 6 can not be configured for different Curves.

**Problem:** Incorrect translation between display channel number and internal software channel ID.

**Solution(s):**

- This release corrects this problem.

### 1.1.14 Revised Features

- Dim / non-Dim feature added. This mode is set during production using the CPU card Option Links.
- UI Lock mode added. Now the keypad can be locked to prevent tampering with the dimmer settings.  
*To lock the user interface (UI), the dimmer must be in one of the three following modes:*
  1. Channel Drive
  2. Scene Drive
  3. Channel Chase Drive

Hold down both the INC and DEC buttons for 5s. This will present the system reset menu with the following message: Sys  
Reset Inc-Yes Dec-No



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Select 'No' by pressing the DEC button, this will present the total reset menu with the following message :  
Total Reset Inc-Yes Dec-No

Select 'No' by pressing the DEC button, this will present the UI lock menu with the following message :  
UI loc Inc-Yes Dec-No

Select 'Yes' by pressing the INC button, this will lock the UI and present the following message:  
UI loc Active

The dimmer UI is now locked, the dimmer continues to operate as before.

To unlock the User Interface: hold down all three buttons for at least 5seconds, the dimmer display will return to the last state before the dimmer UI was locked, after releasing all three key the UI becomes active again.

### Release 1. 22      01 January 2001

#### **SPECIAL NOTE:**

NOT to be used on standard dimmers.

This release changes the Curve specific code to permanently operate all channels using the non-dim curve. Each channel can only be turned fully ON or fully OFF.

#### **Bug Fixes:**

- none

1.1.15 Revised Features

This is a non-dim release only.

### Release 1. 21      07 December 2000

#### **Bug Fixes:**

Symptom: The e24 dimmer (only) will sometimes take up to 1 minute for the slave module to synchronise with the master module.

Problem: As the slave CPU card does not have DMX I/F circuitry loaded, the input level is indeterminate. Intermittent DMX Break detect will re-enable the DMA0 when it should be disabled.

Solution(s):

- This release corrects this problem.
- If an upgrade cannot be done immediately, after power up allow 1 minute for the slave CPU card to synchronise with the master CPU card.

1.1.16 Revised Features

There are no revised features in this release.

### Release 1.20 November 2000

released in part as 1.12(dev only) Oct 2000

#### **SPECIAL NOTE:**



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This release updates the boot code as well as the operational code. Normally we only update the operational code however in this case the pin 4&5 problem requires us to update the boot code as well. You will not be able to tell the difference except that the update procedure will take about an extra 2 minutes. This means the entire process will take several minutes to complete. The LED display will show activity during this period so that you know that something is happening.

### **VERY IMPORTANT:**

Because the boot code is being updated, it is essential that power to the unit is not lost while it is being updated. If power is lost, then it is possible that the dimmer is left in a completely unusable state. If this happens, the only way to recover from here is to fit a new PROM. SO please leave power on the device until you see the signon message showing software version 1.20 and the unit is working as a dimmer again.

### **Bug Fixes:**

**Symptom:** The dimmer will not operate when connected to desks that send DMX signal on pins 4 and 5. Note that this problem does not apply to the e24.

**Problem:** Bug in serial port error handling (boot code).

**Solution(s):**

- This release corrects this problem by upgrading the boot code.
- If an upgrade cannot be done immediately, either disconnect the DMX cable while powering up the dimmer or ensure there is no connection to pins 4&5. Once the dimmer is running the cable can be safely reconnected

**Symptom:** The user interface can be sluggish to operate (this is frequency and mains voltage dependent).

**Problem:** Processor running out of time to handle the user input. The problem was fixed by hand optimising large parts of the code.

**Solution(s):**

- This release corrects this problem.
- If an upgrade cannot be done immediately, varying mains voltage and/or frequency can make the user interface more responsive.

**Symptom:** Some channels on some dimmers (pulse transformer versions only) would misfire.

**Problem:** The +V rail was dropping as the pulse transformers were driven. The problem was fixed by reducing the pulse width of the drive signal.

**Solution(s):**

- This release corrects this problem.

### 1.1.17 Revised Features

- The dimmer's tolerance to frequency variations has been extended. This is of note if you are operating on a 60Hz 3-phase supply.
- The dimmer can now upgrade its boot code.
- The rate of 'auto increment/decrement' has been reduced making the interface a bit easier to use.

**Release 1.02      28 September 2000**



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**Note:** No this is not a typo. This is a special release to deal with the discovered pin 4&5 problem for the ePAK and ePRO. The e24 does not suffer from this problem. This release consists of V1.10 boot code and operational code for V1.01. Nothing else has been changed.

### Bug Fixes:

Symptom: The dimmer will not operate when connected to desks that send DMX signal on pins 4 and 5.

Problem: Bug in serial port error handling (boot code).

Solution(s):

- This release corrects this problem by upgrading the boot code.
- If an upgrade cannot be done immediately, either disconnect the DMX cable while powering up the dimmer or ensure there is no connection to pins 4&5. Once the dimmer is running the cable can be safely reconnected

1.1.18 Revised Features

There are no revised features in this release.

## Release 1.11                      21 June 2000

**Note:** this is first version of software that will work with all eDIM series dimmers (ePAK, ePRO, iPRO and the e24)

### Bug Fixes:

Symptom: The dimmer will not clear its preset scene, curve and DMX address information when total RESET is invoked.

Problem: When Master issues a reset command to the Slave, it resets as well, not allowing time for the EEPROM to be cleared.

Solution(s):

- This release corrects this problem by allowing the Master to complete the EEPROM clear operation, and than resetting.
- If an upgrade cannot be done immediately, manually clearing the scene, curve and DMX address will clear the content of the EEPROM.

1.1.19 Revised Features

There are no revised features in this release.

## Release 1.10 (e24 only)                      6 June 2000

**Note:** this version is intended for the e24 only.

### Bug Fixes:

- Intermittent download errors fixed (this refers to the boot code not the operational code).

1.1.20 Revised Features

- e24Master, e24Slave and iPRO links detection added, this also involves hardware changes to add extra links to the PCB. This is achieved via front panel key lines and cathode drive lines.
- Master/Slave (ie. 24 channel) capability added, including software upload capability.
- New 'phase failed' messages have been added to reflect BANK1 and BANK2 on the e24 dimmer.
- Extra commands added to eLINK section of the code to handle the Slave.



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- If the Serial EEPROM detect software changed to default to I2C instead of SPI as this is the more common hardware platform.
- calcFireCount() optimised to improve User Interface performance on the e24 dimmer. It performed slower than on 12 or 6 channel dimmers.

### Release 1.01                      10 May 2000

#### Bug Fixes:

Symptom: The dimmer behaves erratically, ceases to function in total or in part when a DMX cable is plugged in that either has the pair on pins 4 and 5 terminated or that has signal activity on pin 4.

Problem: Signals on the return line invoke illegal interrupts within the processor. As part of the work on the eLINK code, the interrupts were inadvertently left on.

Solution(s):

- This release corrects this problem by disabling eLINK interrupts when not required.
- If an upgrade cannot be done immediately or your code is prior to version 1.00 then cutting the pin 4 and/or pin 5 connection will prevent the problem from happening.

Symptom: The dimmer reports 'E2 failed call dealer' when used with ST Serial EEPROM (possibly others). The dimmer continues to operate, but the DMX address and stored SCENE and CURVE(ePRO, e24, iPRO) will be lost on power down.

Problem: Illegal 'ACK' signal send to slave after a byte read, this causes the I2C communication to stop and report the Serial EEPROM to be faulty.

Solution(s):

- This release corrects this problem by sending 'NACK' (no ACK) after a byte read.
- Since the boot code is affected, upgrade can only be done by replacing the FLASH IC (U1 29F040)
- Or by using NATIONAL Serial EEPROM (24C02N) U6

#### 1.1.21 Revised Features

There are no revised features in this release.

### Release 1.00                      21 March 2000

#### Bug Fixes

Symptom: The dimmer with issue C PCB would not start up. The SPI EEPROM comms were being corrupted by attempts to talk to the temperature sensor (I2C). Bug only effected issue C PCB. Bug fixed.

Symptom: When CURVE other than 'C1' selected: driving the outputs at 99% produced 99% drive, when driving at 100% produced 0% drive. Bug fixed.

Symptom: All negative temperatures were interpreted as temperatures above 125°C. This would cause the dimmer to shut off all outputs and report 'too hot' on the display. Bug Fixed.

Solution: Warm up the dimmer to above 0°C.



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### 1.1.22 Revised Features

- Fan speed control added.
- 105°C output shut down added
- eLINK prompt changed to a string of characters (ie eLINK is not compatible with code 0.99 and below)
- new eLINK options added (ie version requests)

## Release 0.99                      18 February 2000

### Bug Fixes

Symptom: Lock up on Total system reset fixed. Wait\_10ms() was not returning when more than one phase was active. This was used for updating the serial EEPROM.

Symptom: The scene mode LED would come on and off by itself. ThreeMsRoutines fixed to stop corrupting gSceneMode.

### 1.1.23 Revised Features

There are no revised features in this release.

## Release 0.98                      4 February 2000

### Bug Fixes

#### Revised Features

- Production test added to help during final product testing.
- Download capability is added, allowing software upgrades.
- Phases vs channel numbers has changed to reflect new rear panel layout. This also involved the fpga redesign.
- To reduce the load on the internal power supply, the fan is turned off when only one phase is detected.

## Release 0.95,                      23 December 1999

### Bug Fixes

#### Revised Features

- 'ALL' channels mode added. When in channel mode, click and hold the INC Key to activate.
- curves added
- 1st rel. of single phase code, this will allow the dimmer to run all channel from a single phase (ie 0° lag between phases)
- The hardware was changed to a flat address space, this is to allow software downloads into the Flash memory
- I<sup>2</sup>C protocol added. PCB issues greater than issue 'C' are now supported.

## Release 0.90,                      30 September 1999

Initial Release.



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## Appendix A: How to load a new version of firmware into the ePAK, ePRO, e24 and iPRO

There are three methods available to you to update the boot code.

- 1) Use the CodeLink (or eLINK) support program available from LSC and download the updated code from our website. This is by far the simplest method, as you do not have to open the unit at all.
- 2) Obtain a binary file version of the PROM and update the flash PROM yourself.
- 3) Purchase an updated PROM from LSC.

- END -



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