

# ADDICT®-SYS V3.1.0

## User Manual

Issue: 5/2/2020



**Advanced DALI & DMX<sub>512</sub> & RDM – Install, Commission & Test**

## Contents

|                                                                                 |           |
|---------------------------------------------------------------------------------|-----------|
| <b>ADDICT®-SYS V3.1.0 .....</b>                                                 | <b>1</b>  |
| Advanced DALI & DMX <sub>512</sub> & RDM – Install, Commission & Test.....      | 1         |
| <b>Introduction .....</b>                                                       | <b>4</b>  |
| SAFETY FIRST.....                                                               | 5         |
| Check Before Starting .....                                                     | 5         |
| Guarantee.....                                                                  | 5         |
| ADDICT Legacy.....                                                              | 7         |
| Using the ADDICT .....                                                          | 8         |
| Keys/Buttons.....                                                               | 8         |
| LEDs .....                                                                      | 8         |
| Connectors (Top Panel) .....                                                    | 8         |
| Menu Navigation .....                                                           | 9         |
| Function Screen Navigation and Value Selection .....                            | 9         |
| Global options for DALI functionality .....                                     | 11        |
| Accessories .....                                                               | 11        |
| DALI Universal Lead Set.....                                                    | 11        |
| 9V Battery and 24V DC Plug-pack.....                                            | 11        |
| PC Communication Adapter and Leads .....                                        | 12        |
| DMX <sub>512</sub> and RDM Adapter.....                                         | 12        |
| Wi-Fi Connectivity .....                                                        | 12        |
| Firmware Update.....                                                            | 12        |
| <b>DALI Functionality.....</b>                                                  | <b>14</b> |
| Installation.....                                                               | 14        |
| All Min/Max.....                                                                | 14        |
| Random Address .....                                                            | 14        |
| Physical Selection .....                                                        | 15        |
| Remapping.....                                                                  | 17        |
| Assign Groups.....                                                              | 17        |
| Configuration .....                                                             | 19        |
| Settings .....                                                                  | 19        |
| Groups .....                                                                    | 20        |
| Scenes.....                                                                     | 22        |
| DALI Types .....                                                                | 24        |
| Summary.....                                                                    | 24        |
| Diagnostics .....                                                               | 26        |
| Test Commands.....                                                              | 26        |
| Chasing.....                                                                    | 27        |
| Sniffing .....                                                                  | 27        |
| Count Devices.....                                                              | 34        |
| Check Failures .....                                                            | 34        |
| Advanced.....                                                                   | 35        |
| SCI (Serial Communications Interface) Mode .....                                | 35        |
| Capturing.....                                                                  | 35        |
| Programming.....                                                                | 39        |
| ADDICT Options .....                                                            | 43        |
| <b>DMX<sub>512</sub> and RDM (Remote Device Management) Functionality .....</b> | <b>44</b> |
| Test DMX <sub>512</sub> – Test Channels .....                                   | 44        |
| Test DMX <sub>512</sub> – All Channels .....                                    | 45        |
| Test DMX <sub>512</sub> – Chase Channels.....                                   | 45        |

*Test DMX<sub>512</sub> – Sniff Channels* ..... 46

*RDM Setup – Identify All* ..... 47

*RDM Setup – Count Devices* ..... 47

*RDM Setup – Setup Devices*..... 47

**ADDICT Menu Tree**..... 55

**Optional Extras**..... 56

## Introduction

Congratulations on your purchase of the Control Freak® ADDICT®, arguably the first and best tool for DALI (& DMX<sub>512</sub> and RDM with the optional DMX<sub>512</sub> lead). With the ADDICT®, project commissioning becomes faster and easier. This is the user manual for the ADDICT®.

You can power the bus (also called a DALI 'line'), detect line power, install and configure devices, back up your work, sniff and capture time stamped data traffic, test and interrogate devices and find and fix faults. It is also an SCI, supports DMX<sub>512</sub> testing and RDM configuration. Since its release at Light Fair International at Las Vegas in May of 2006, the ADDICT® has become a virtual industry standard chosen by numerous OEMs, installers and systems integrators.

The ADDICT® is primarily an installation and configuration tool for intelligent lighting devices that comply with the DALI (Digital Addressable Lighting Interface) protocol. As an added feature, it can also be used to test systems based on the DMX<sub>512</sub> protocol (requires optional DMX<sub>512</sub> lead) and configure devices that implement the RDM (Remote Device Management) protocol.

### **DALI bus or 'line' power.**

Since a DALI system requires a line power supply for communication, the ADDICT® will automatically provide power for the line (up to 245mA) when you first start using a DALI menu item in the ADDICT® if an external supply is not already present. Note: the ADDICT® cannot power the line unless it is externally powered by >14.5VDC preferably using the recommended external 24VDC mains adaptor which is normally supplied with the ADDICT®. If the line is separately powered, you can choose whether to connect the recommended external mains adaptor or battery to the ADDICT®, or instead rely solely upon the internal battery which will power the ADDICT® but not the DALI line. Note that the term 'bus' is used interchangeably with the word 'line' in this manual.

It is inadvisable to connect two DALI line power supplies at the same time and for this reason if the ADDICT® is already supplying line power, you should NOT connect another external supply to the line without first switching the ADDICT® off so it can detect the line power when you turn it on again, or hold the backlight button down for 1 second to temporarily disable the ADDICT® line power. When the ADDICT® is supplying line power the DALI bus status LED on the ADDICT® will flash repeatedly. Alternatively, when the ADDICT® detects an external line power supply the indicating led will illuminate constantly. When the led is off no bus (line) power supply is present and the ADDICT® has not yet been asked to perform any function requiring it to transmit or receive on the line. Note that when the ADDICT® is enabled in SCI TX mode (under the options menu), it will not power the line regardless of external supply, and requires an SCI such as a Control Freak® DIDIO® to talk through to the line.

Also, important – errors will occur if another DALI controller on the line tries to communicate concurrently with the ADDICT, except when you are in Sniff mode. Many of the ADDICT's DALI functions may require all other controllers to be disabled before they can be utilised successfully.

### **Known Bugs**

There are no other known bugs, so if you find one please let us know!

### **Other products**

Creative Lighting also make SLAMMO LED dimmers for DALI DMX<sub>512</sub> DSI and RDM, DIDIO DALI serial Communication Interfaces, DIDIO DALI line power supplies, DIDIO Scene Controllers, DIDIO RGB and Sequence Controllers, DIDIO DMX-DALI interfaces, LIDA DALI AC controllers for Contactors/relays, Fans and HID loads.

## SAFETY FIRST

Our first consideration is always safety. Under any circumstances:

- ⚡ DO NOT connect the ADDICT® to an untested cable – ENSURE the cable is free of mains voltage and certified at a suitable SELV by the installing electrician. The ADDICT® is immune to mains voltages on the line except in the rare circumstance that mains is applied at the same moment that the ADDICT is both powering the line AND communicating by shorting the line. When mains voltages up to 250V<sub>AC</sub> are present on the DALI line, the ADDICT will display a warning “CAUTION: Over-voltage on DALI line, clear fault and reset”.
- ⚡ DO NOT open the ADDICT® case, battery compartment only - Qualified & authorised personnel only to open the main case.
- ⚡ DO NOT place or install goods in any way that could prove hazardous.
- ⚡ DO NOT attempt to change any part of the wiring or connections provided
- ⚡ DO NOT spray or immerse power supply or ADDICT® unit with or in liquid.
- ⚡ DO NOT operate or transport the ADDICT without the protective rubber boot.

## Check Before Starting

To ensure that conditions of the Warranty are not breached, please peruse the following sections on Condition of Goods and System Requirements.

### *Condition of Goods*

GOODS ARE THOROUGHLY CHECKED AND PASS RIGOROUS TESTING BEFORE SHIPMENT. IF FOR ANY REASON THESE GOODS ARE DAMAGED OR PARTS ARE MISSING IN TRANSIT:

- The damage or loss should be noted by the Carrier’s agent on all copies of the consignment document - or else the goods should be refused.
- It is possible for damage to go undetected until close inspection after unpacking. If the carrier is not prepared to wait for such inspection, clearly mark the carrier’s consignment document: - “Subject to Check” before signing. In the event of loss or damage, notify the carrier and the company from where the goods were purchased, immediately and in writing.

RETURNS ARE NOT ACCEPTED FOR ANY REASON unless written permission is granted from Creative Lighting.

## Guarantee

Congratulations on acquiring this genuine Control Freak ADDICT® which is guaranteed to the purchaser for a period of 24 months from the date of purchase from us.

Under normal use and for applications for which this product was designed, the ADDICT® and all component electronics are warranted to be free of defects in material and workmanship. Mains immunity is not guaranteed under all circumstances (refer Safety First section above).

In the unlikely event that the ADDICT® proves to be defective, we will decide to either repair or replace the defective components. Before that can happen, the goods must first be returned to us at the purchaser’s cost. If we determine that the goods are defective, we will not only repair or replace the defective components at no cost to the purchaser; we will also pay the cost to return them to the purchaser’s Australian address by our standard freight method. Any cost to reinstall the goods is to be borne by the purchaser.

This Guarantee specifically excludes faults which arise because of alteration, tampering, misuse, abuse, accident, vandalism, or negligence. In no event shall the manufacturer be liable for consequential damages.

All other warranties inclusive of any warranties of merchantability or fitness for any particular purpose whether expressed or implied are hereby expressly negated to the fullest extent permissible by law. This Guarantee constitutes the sole and exclusive remedy to the purchaser for proven defects.

***ADDICT Legacy***

The ADDICT is now a 3<sup>rd</sup> Generation DALI/DMX<sub>512</sub> commissioning device built upon years of research and development. The new ADDICT V3 moves to an unprecedented level of sophistication, allowing for more features than ever before.

The V3 allows for the following improvements over the V2

- 16 times as much memory
- 10 times as many Millions of Instructions per Second
- Use of a Real-Time Operating System
- Native 32-bit processing
- Wi-Fi connectivity
- Improved DMX<sub>512</sub> transient protection
- User Firmware Upgrades
- DALI Device Types
- DALI V2 Commands

## Using the ADDICT

### Keys/Buttons

| Name      | Image                                                                               | Function                                                                                                                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power     |    | Turns the ADDICT® On or Off                                                                                                                                                                                                |
| Up        |    | Navigate up in menus and select the previous value on function screens. If pressed while on the first item/value, selection will wrap around to the last item/value                                                        |
| Down      |    | Navigate down in menus and select the next value on function screens. If pressed while on the last item/value, selection will wrap around to the first item/value                                                          |
| Increase  |    | Increases the currently selected value by 1. Holding down the button will cause the value to be increased faster. If pressed while on the maximum value, it will wrap around to the lowest possible value                  |
| Decrease  |    | Decreases the currently selected value by 1. Holding down the button will cause the value to be decreased faster. If pressed while on the minimum value, it will wrap around to the highest possible value                 |
| Enter     |    | Select an item in a menu and if the final value on a function screen is selected, execute the function using the selected values. If the final value is not selected, the next value will be selected.                     |
| Escape    |   | Return to the previous menu and exit a function and return to the menu.                                                                                                                                                    |
| Backlight |  | Briefly pressing the backlight button will cause the LCD backlight to toggle between on and off. If held down for more than a second, the internal DALI line power supply will also be turned off (if currently activated) |

### LEDs

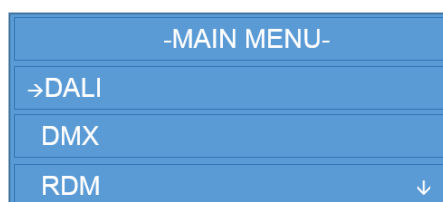
| Name            | Colour | On                                                    | Flashing                            | Flashing twice                           | Off                                                                        |
|-----------------|--------|-------------------------------------------------------|-------------------------------------|------------------------------------------|----------------------------------------------------------------------------|
| DALI Bus Status | Green  | An external line (bus) power supply has been detected | The ADDICT® is supplying line power | The ADDICT® is in SCI TX (transmit) Mode | No external line power supply detected & the ADDICT® isn't supplying power |
| Battery         | Orange |                                                       | The 9V internal battery is low.     |                                          | Battery is healthy                                                         |

### Connectors (Top Panel)

| Type                          | Function                                                                                                                                                                                                                                              |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4mm banana female sockets x 2 | Connects the ADDICT® to a DALI line via the supplied universal lead set with 2 x 4mm banana jacks.                                                                                                                                                    |
| Male 2.1mm power socket       | Allows for an external 24VDC (9-24V; >15V (eg 24V) required if powering the DALI line) supply to be used to power the ADDICT®. Mechanically switches battery off when external power plug is inserted – the ADDICT® will turn off during switch over. |
| RJ45 socket                   | Used for PC communications and DMX <sub>512</sub> /RDM                                                                                                                                                                                                |

## Menu Navigation

All the functions available with the ADDICT® are accessed using a simple menu system:



The → arrow along the left-hand side of the screen indicates which menu item is currently selected.

Pressing up and down (▲ and ▼) buttons navigates up and down the current menu.

Pressing **ENTER** opens the selected menu item, which will either display a sub-menu or enter a function screen (which are explained in the next section).

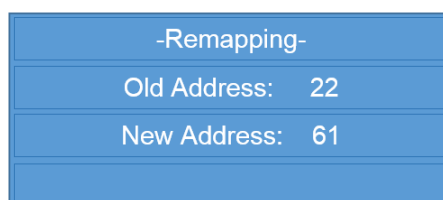
Pressing **ESCAPE** will return from a sub-menu back to the previous menu.

Note: most menus contain more than 3 items and therefore all the items cannot be shown at once. If there are more items above or below those currently shown, ↑ and ↓ arrows will be shown along the right-hand side of the screen.

## Function Screen Navigation and Value Selection

Nearly all the actual functionality that can be performed with the ADDICT is done through “function screens”, and typically each function screen is used in the same way.

The following is an example of a typical function screen:



Function screens normally have a title along the top line. Usually, there is one or more values that can be selected, and in the above example they are the values for “old address” and “new address” (note the two values are in bold. In this user manual, all values that are selectable on a function screen are bold).

The value that has focus (and can therefore be changed) will always be flashing. The increase and decrease (– and +) buttons are used to change the currently selected value.

The up and down buttons are used to navigate between the values that can be selected.

Note: a selectable value is not always a number, e.g. YES and NO can be selectable values when confirming certain actions.

Generally, when a function screen is displayed, the relevant function will not occur until the enter button is pressed on the last value (typically the value closest to the bottom-right of the

screen). Pressing enter on any other value on the screen has the same effect as pressing down. In special cases, additional information is displayed when pressing the enter button.

Pressing escape will return to the menu.

## Global options for DALI functionality

Three global options, two of which are enabled by default, may affect the operation of function screens (but only for DALI functionality):

- *Live Preview* – if this option is enabled, the ADDICT® will transmit DALI commands to immediately show what has been selected for certain values, e.g. when selecting the address of a device, that address is set to maximum and all others to minimum. The effect of live preview on each function screen is given in this manual with the descriptions for each screen.
- *Auto-Scan* – many function screens require a DALI device (either an address or group) to be selected from the line. If auto-scanning is enabled, the ADDICT® will skip over addresses/groups that don't respond. If auto-scanning is disabled, all addresses and groups are selectable, but typically the ADDICT® won't allow the function to be performed unless the selected device responds.
- *SCI Tx Mode* – allows the user to communicate with the DALI loop via a suitable SCI (Serial Communications Interface) such as the DIDIO SCI made by Creative Lighting. This mode also enables the user to communicate wirelessly via suitable radio modems such as those available from Creative Lighting. The ADDICT® is shipped with the SCI Tx mode OFF by default. When this mode is enabled by the user, the bus status led will flash 1-2 pause 1-2 pause continuously. This mode can ONLY work with the DALI line via the SCI mentioned above and the user cannot work normally with a DALI device or line until they disable the SCI Tx Mode.

The procedure for setting the above options is described on page 43.

## Accessories

### DALI Universal Lead Set

The ADDICT® is supplied with a set of red and black leads suited to plug into the DALI sockets on the top of the ADDICT®. The leads also come with various types of connectors that can be attached depending on the connection available to the DALI line.

### 9V Battery and 24V DC Plug-pack

Typically, the ADDICT® is powered by a standard 9V battery (Note: rechargeable 9V batteries are not recommended, batteries are not included but are optionally available) that can be changed when necessary by opening the battery cover on the back of the ADDICT® (if fitted, the rubber boot will need to be removed first). Ensure that the 9V battery is inserted with the correct polarity. The 9V battery is intended to operate the ADDICT® in all modes except powering the DALI line which requires an external supply connection to the ADDICT® such as the 24VDC mains adaptor supplied as standard with the ADDICT®.

A 24VDC plug-pack mains adaptor may also be used instead of the battery and a suitable SMPS slimline mains adaptor is available for purchase from Creative Lighting.

Due to mechanical limitations of switching between the battery and plug-pack, the ADDICT® will typically switch off if the plug-pack is connected or disconnected.

Note: When the plug-pack is connected, the battery is electrically disconnected from the ADDICT®, and therefore the plug-pack does *not* recharge the 9v battery.

## PC Communication Adapter and Leads

Some of the functions available with the ADDICT® require a connection to a PC. To connect the ADDICT® to a PC, an RJ45 to DB9 adaptor or lead may be used (available from Creative Lighting). If your PC or laptop does not have a 9-pin serial port, you will need a suitable USB-9 pin serial adaptor available from computer supply companies. Note: the combined length of the connection between ADDICT® and PC should be less than two metres.

The required serial port settings for the PC (or any device capable of transmitting/ receiving RS-232 serial data) is:

- Baud rate – 19200
- Data bits – 8
- Parity – None
- Stop bits – 2
- Handshaking – None

To communicate with the PC<sup>1</sup> we recommend you use a Terminal application such as HyperTerminal (available standard in many OS versions eg Windows XP) or similar.

To sniff to PC, you will need a null modem between the DB9 lead and the PC together with the appropriate gender-changer.

## DMX<sub>512</sub> and RDM Adapter

When testing DMX<sub>512</sub> or configuring a device using RDM, the optional adapter lead(s) converting from RJ45 to 3-pin or 5-pin XLR connectors are used. The Y adaptor has both male and female XLR connectors for use with both DMX<sub>512</sub> receive and transmit respectively.

## Wi-Fi Connectivity

The ADDICT V3 features Wi-Fi connectivity, allowing for remote control via Tablet/Phone Application. The Android Companion Application is outlined in a separate manual, but includes the ability to use almost all default functions wirelessly, while providing additional support and a more user-friendly interface.

To connect to the Addict, select Wi-Fi from the main menu. Hint: In the main menu press Up once to quickly highlight the Wi-Fi option!

On the phone/tablet device select the 'ADDICT\_XX' SSID from the list and enter the password **32828777**.

## Firmware Update

The ADDICT V3 allows for firmware updates to be applied via DMX<sub>512</sub>, or RS485. The ADDICT V3 must be in boot mode to accept the firmware update.

Tip: The current ADDICT firmware version can be viewed on the 'about' option in the main menu.

A Creative Lighting Firmware Updater tool has been developed to correctly write the firmware to the device. Due to the size of the firmware this can take several minutes.

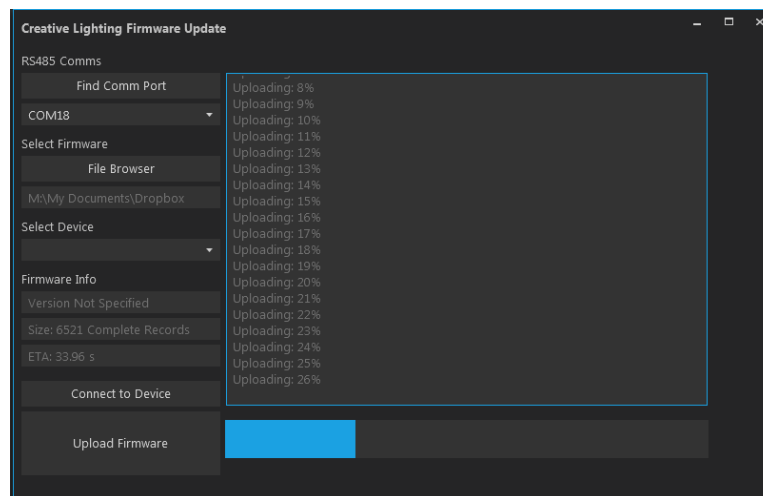
---

<sup>1</sup> Personal Computer with a Serial Port

To connect the ADDICT to the PC requires a USB to RS485 tool, such as the DIGITECH RS485 tool, or Enttec USB Pro.

To apply the firmware update;

1. Enter Boot Mode
  - a. Either by pressing 'Connect to Device' from the PC while "Control Freak ADDICT" is displayed on screen at start-up,
  - b. Or by pressing both the ESC and ENTER Keys while "Control Freak ADDICT" is displayed on screen.
  - c. If successful, the screen will display "Firmware Update"
2. Use the Tool shown below. Select the firmware to be uploaded and press Upload Firmware. Both the application and the ADDICT will display the percentage of firmware that has been uploaded.



## Troubleshooting

- If the tool stops uploading firmware, repeat the process. If it continues to happen contact Creative Lighting
- If the process stops, turn off the ADDICT and repeat the process. During the process the firmware is erased from the device, if the ADDICT attempts to run with no firmware "No firmware" will be displayed on the screen.
- Stopping the process during upload will not 'brick' the ADDICT, however it will not be usable until the firmware has been successfully updated.

## DALI Functionality

The DALI menu contains four submenus: – Installation, Configuration, Diagnostics, and Advanced – and the underlying functionality contained in each of these sub-menus is described in detail in this section of the user manual.

### Installation

The *Installation* menu contains the most common functions required when installing DALI devices.

#### All Min/Max

Continuously sends alternating “Minimum” and “Maximum” commands every 2 seconds to all connected devices on the line until either the escape or enter button is pressed. This is a quick way of confirming that all devices connected to the line are responding to DALI broadcast commands.

*Selectable values: none*

#### Random Address

Assigns addresses randomly to the devices on the DALI line. There are two options available under *Random Address* – *Address New* and *Address All*.

When *Address New* is selected, only devices that currently do not have addresses assigned to them will be addressed as those that report addresses will keep their current addresses. If *Address All* is selected, all devices will have their addresses cleared and they will then be randomly addressed.

Before the addressing procedure begins, confirmation is required:

|                         |
|-------------------------|
| -Address New-           |
| Assign Random           |
| Addresses to            |
| NEW devices ? <b>NO</b> |

During addressing, a progress bar is displayed for each device while it's being "located". Once a device is located, the address it has been assigned is displayed on the screen and then the ADDICT® will then move on to locating the next device.

|                |
|----------------|
| -Address New-  |
| Addressing...  |
| [ - - - - - ]  |
| Address 23 Set |

If *Live Preview* is enabled, a “Minimum” command is sent to all devices at the commencement of random addressing, and then each device on the line is sent a “Maximum” command when it's assigned an address to show the addressing taking effect.

During the random addressing process, one the following messages may appear on the last line of the screen:

- “Complete” – random addressing has finished, and at least one device has been randomly assigned an address.
- “No new devices” – no devices without addresses were detected on the line when *Address New* is selected.
- “No devices on bus” – no devices were detected on the line when *Address All* is selected.
- “No spare addrs” – The ADDICT® failed to give a device an address because all 64 addresses available with DALI are currently in use on the line.
- “Search error or Verify failed” – an error occurred when trying to locate a device. The ADDICT® will allow three of these errors to occur before it stops the random addressing process. Typically, these errors are non-repetitive and are due to intermittent noise on the line, hence the 3x fail-safe approach.

#### Selectable values:

- Confirmation (YES, NO) – Press enter with YES selected to confirm random addressing, NO to cancel.

At the end of a random addressing session, the user can choose to do a check count of the line by pressing enter. For details see: Count Devices on page 34. Press escape from the Count Device screen to return to the previous addressing menu.

## Physical Selection

Assigns addresses to the devices on the DALI line one at a time by means of their lamps being temporarily removed. There are two options available under *Physical Selection* – *Address New* and *Address All*.

When *Address New* is selected, the physical selection procedure begins immediately and all devices that report their addresses will keep their current addresses. If *Address All* is selected, all devices will first have all their addresses cleared.

Before the physical selection procedure begins, confirmation is required:

|                        |
|------------------------|
| -Address New-          |
| Phys. select           |
| Addresses for          |
| NEW devices? <b>NO</b> |

There are four different screens that can be displayed during the physical selection procedure:

|                  |
|------------------|
| -Phys. Select .- |
| Remove lamp ...  |
| Next Addr: 0     |
| Addressed: 0     |

This screen will be shown if any devices on the DALI line do not currently have an address. Also shown is the next address that will be assigned to a device when its lamp is removed, and how many devices have already been addressed during this physical selection procedure (these two fields are always displayed during physical selection).

If a lamp is removed from a device, it is assigned with the next address, and the instruction of the screen changes to the following:

|                  |   |
|------------------|---|
| -Phys. Select .- |   |
| Connect lamp ... |   |
| Next Addr:       | 0 |
| Addressed:       | 1 |

The ADDICT® will then wait until the lamp is reconnected. Once the lamp is reconnected, the ADDICT® will visually confirm that the device has been addressed:

|                  |   |
|------------------|---|
| -Phys. Select .- |   |
| Visual conf ...  |   |
| Next Addr:       | 0 |
| Addressed:       | 1 |

During visual confirmation, the lamp will flash three times if it has been addressed. It will only flash once if it already had an address and it was not assigned the new address.

After visual confirmation, the “Remove lamp” screen will once again be displayed. When all the devices on the DALI line have been addressed, the following screen will be shown:

|                  |   |
|------------------|---|
| -Phys. Select .- |   |
| All addressed    |   |
| Next Addr:       | 3 |
| Addressed:       | 3 |

If *Live Preview* is enabled, a “Minimum” command is sent to all devices at the commencement of physical selection, and then once a device has been addressed, it will be sent a “Maximum” command. If *Live Preview* is disabled, visual confirmation will still occur, but afterwards the device will return to its previous level.

*Selectable values:*

- Confirmation (YES, NO) – Press enter with YES selected to confirm random addressing, NO to cancel.

Note: Some DALI devices are not capable of detecting when their lamps are removed, however these devices may be fitted with a push button or similar that mimics a removed lamp for physical selection.

## Remapping

Remapping allows devices on the DALI line to be given new addresses, and will usually be required after random addressing if devices need to have specific addresses (which is recommended). The following example will remap address 14 to address 55:

|                 |
|-----------------|
| -Remapping-     |
| Old Address: 14 |
| New Address: 55 |
| (unused)        |

When selecting the new address, a message will be displayed indicating if the selected address is not currently used on the line (as shown in the above figure).

If the new address is currently assigned to a device on the line, then the addresses of both devices will be swapped, provided there is at least one unused address available on the line.

The ADDICT® also allows a new address of “CLR” (CLEAR) to be selected and this causes the device with the old address to have its address cleared. The following example will clear address 7 (and therefore that device will now have no address):

|                  |
|------------------|
| -Remapping-      |
| Old Address: 7   |
| New Address: CLR |
|                  |

### Selectable values:

- Old Address (0 – 63) – The current address of the device being remapped
- New Address (0 – 63, CLR) – The new address (or no address) of the device being remapped. Press enter to remap the device.

**TIP!** If the ADDICT® reports no devices and you are sure that you are correctly connected to the line, you may have duplicate addresses in devices on the line. If you suspect this cause, you can correct the problem by one of the following:

- Select “Address ALL” for random addressing or physical selection – this will initially clear all addresses
- If the duplicated address is known, clear that address (refer above) using remapping to CLR

## Assign Groups

Once devices have been given addresses, they can then be assigned to one or more of the 16 DALI groups as required. *Assign Groups* provides a visual method of assigning groups to a device, with ticks indicating assigned groups and crosses indicating unassigned groups. The following example shows address 30 is currently assigned to groups 3, 10 and 15:

|                          |
|--------------------------|
| -Assign Groups-          |
| Address: 30              |
| 0 – x x x ✓ x x x x – 7  |
| 8 – x x ✓ x x x x ✓ – 15 |

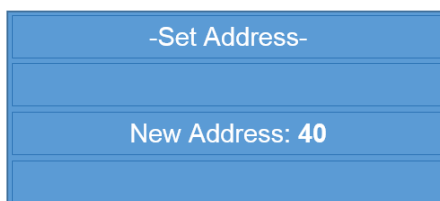
The navigation buttons (up and down) are used to select between the address and each of the 16 groups. When a group is selected, +/- toggles between a tick and a cross and the group will be assigned/unassigned when that group is unselected. Each time a navigation button is pressed, the screen is updated to show the current group assignment and this can be used to confirm any changes that have been made.

An alternative means of assigning groups and more complex grouping (e.g. adding a group to another group) can be performed under *Configuration* → *Groups*.

*Selectable values:*

- Address (0 – 63) – The address of the device being assigned to groups. Current group assignments shown when selecting.
- 0–15 Group assignments (✕, ✓) – ✓ for assigned to the group, ✕ for unassigned.

Set AddressSet Address effectively sets the address of every device on the line to a specified address. The following example will set all connected devices to address 40:

A screenshot of a blue-themed user interface for setting a DALI address. The screen has a title bar at the top that says "-Set Address-". Below the title bar is a large input field containing the text "New Address: 40".

Although setting every connected device to a specific address is potentially undesirable when working with multiple devices (hence the need for a confirmation screen) this function allows for single devices to be quickly addressed before being connected to a DALI line.

Note: This feature won't work with devices that contain more than one logical DALI device (e.g. Creative Lighting SLAMMO® 3 channel LED dimmer) since all logical devices will be assigned the same address, so these devices will still need to be addressed using random addressing.

As well as being able to select one of the 64 DALI addresses, CLR can also be selected as the new address, and this has the effect of clearing the addresses from all connected devices.

*Selectable values:*

- New Address (0 – 63, CLR) – The new address (or no address) for all connected devices. Press enter to proceed to the confirmation screen.
- Confirmation (YES, NO) – Press enter to confirm setting the new address, YES to set the address, NO to cancel.

## Configuration

Each DALI device contains several standard stored settings that affect how it will react to different commands and events. The *Configuration* menu contains five functions for changing these stored settings, as well as a *Summary* function for quickly viewing the current settings for a device.

### Settings

*Cfg Settings* is used to configure the stored settings in a device (or group of devices) that require only one value. The ADDICT V3 features DALI V2 control, allowing V2 settings to be configured. Device(s) requiring more than one value, such as groups assignments and scenes which have 16 values each are not included here:

- Minimum level
- Maximum level
- System failure level
- Power-on level
- Fade time
- Extended Fade (DALI V2)
- Fade rate
- Defaults?
- Save Memory? (DALI V2)

The *Defaults?* And *Save Memory?* Settings are not stored settings, but instead are used to instruct the device(s) to reset all their settings (including those for group assignments and scenes) to factory default levels (but does not modify the address of any device) and save persistent memory (Such as Address, Group, Fade Time, etc). Tip! Save memory can be used if a DALI device is not saving settings during power fail.

|                |
|----------------|
| -Cgf Settings- |
| Address: 22    |
| Maximum: 246   |
| ( 80% )        |

There are 3 selectable values on the *Cfg Settings* screen – the Address/Group, the setting name, and the setting value. For addresses of devices that are on the line, the current value for the setting is displayed when the address or setting name is selected. For addresses of devices that aren't on the line or when a group is selected, the current value is replaced with dashes.

|                 |
|-----------------|
| -Cgf Settings-  |
| Group: ALL      |
| Power-on: - - - |
|                 |

When a setting value is displayed, the alternative text for that value will also be displayed (e.g. percentages for levels, time for fade time and steps for fade rate).

When changing a value, the value in the device is not actually changed until enter is pressed.

The values for the *Defaults?* setting is yes/no, and selecting yes and pressing enter will cause the settings for the device to be reset back to factory defaults.

Although current values can't be retrieved for groups of devices in DALI (as multiple devices would have to simultaneously reply), *Cfg Settings* can still be used to change the settings for groups of devices, but confirmation won't be available unless an address within that group is selected.

If *Live Preview* is enabled:

- Selecting an address/group will cause that address/group to be set at maximum and all others at minimum
- Selecting a value for a setting with a level will cause a "Go to level" command to be sent to the selected address/group.

*Selectable values:*

- Address/Group (Address:0-63, Group:0-15, Devices:ALL) – The address or group of the device(s) to configure the settings for.
- Setting (Minimum, Maximum, Sys Fail, Power On, Fade Time, Fade Rate, Defaults?) – The setting to configure or reset to defaults
- Setting Value (various ranges of values depending on setting) – Pressing enter will save any changes made to the selected setting.

## Groups

*Config Groups* provides a more comprehensive and alternative method of adding and removing devices to DALI groups (when compared with *Installation* → *Assign Groups*.)

|                 |
|-----------------|
| -Config Groups- |
| Address: 11     |
| +/- Group: 0    |
| Assigned: YES   |

The address or group selected in the second line is the device that is being added to, or removed from, a DALI group. The group chosen in the third line is the group being added to, or removed from. Since both values can be groups, values always have their "line" indicated in this section to remove the ambiguity.

When an address for a device that is on the line is selected (2<sup>nd</sup> line of screen text), its current assignment to the selected DALI group (3<sup>rd</sup> line of screen text) is displayed next to "assigned" as either yes (is assigned to the group) or no (is not assigned to the group).

When a group is selected (2<sup>nd</sup> line of screen text), the current assignment to the selected DALI group (3<sup>rd</sup> line of screen text) cannot be shown, and the yes/no option will not be available until the user navigates down to "assigned".

The final line of screen text sets whether the selected device(s) (2<sup>nd</sup> line of screen text) should be assigned to the selected DALI group (3<sup>rd</sup> line of screen text). Confirmation is provided for

addresses (2<sup>nd</sup> line of screen text), but no confirmation is available for groups (2<sup>nd</sup> line of screen text) unless an address within that group is selected (2<sup>nd</sup> line of screen text).

If *Live Preview* is enabled:

- Selecting an address/group (2<sup>nd</sup> line of screen text) will cause that address/group to be set at maximum and all others at minimum
- Selecting a DALI group (3<sup>rd</sup> line of screen text) will cause that group to be set at maximum and all others at minimum

*Selectable values:*

- Address/Group (Address:0-63 and Group:0-15, ALL) – The address or group of the device(s) to configure the groups for.
- +/- Group (0 – 15) – The group to be assigned/unassigned to.
- Assigned (YES, NO) – Pressing enter will set the group assignment, YES for assigned, NO for unassigned

## Scenes

Each DALI device can have store up to 16 scene levels, and the *Config Scenes* menu contains three functions for setting up these scene levels.

### Set Scenes

*Set Scenes* allows scene levels to be set for both addresses and groups, and follows a similar approach to *Config Groups*:

|                          |
|--------------------------|
| -Config Scenes-          |
| Address: <b>58</b>       |
| Scene: <b>15</b>         |
| Level: <b>255 (MASK)</b> |

When an address is selected, the level for the currently selected scene is displayed, as well as either the percentage or “MASK” (mask means take no action in relation to the Scene). For groups, current levels can’t be displayed because DALI doesn’t work that way, but the scene level can still be set (and can be checked if desired by selecting an address that is assigned to that group).

When a current scene level is displayed or a new level is selected, a message is also displayed indicating if the level is above the maximum level or below the minimum level for the selected address (but not when a group is selected).

If *Live Preview* is enabled:

- Selecting an address/group will cause that address/group to be set at maximum and all others at minimum
- Selecting a scene will cause that scene to be recalled for the selected address/group
- Selecting a level will cause a “Go to level” command to be sent to the selected address/group.

*Selectable values:*

- Address/Group (Address:0-63 and Group:0-15, ALL) – The address or group of the device(s) to configure the scenes for.
- Scene (0 – 15) – The scene being configured
- Level (0 – 255) – The scene level. Pressing enter will save any changes made to the selected scene level.

### Copy Scenes

*Copy Scenes* allows for scenes to be copied between devices.

|                                 |
|---------------------------------|
| -Copy Scenes-                   |
| From: <b>A16</b> Scn: <b>10</b> |
| From: <b>G05</b> Scn: <b>1</b>  |
|                                 |

To copy scenes, a source device and scene and a target device and scene must be selected. It is also possible to select groups as a source/target device and all scenes as a source/target scene.

However, not all possible combinations are valid, and the following table outlines the scenarios available when copying scenes:

| Source  |        | Target               |        | Result                                                                                                                                               |
|---------|--------|----------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device  | Scene  | Device               | Scene  |                                                                                                                                                      |
| Address | 0 – 15 | Address or Group     | 0 – 15 | The selected scene from the source device is copied to a scene in the target device(s).                                                              |
| Address | 0 – 15 | Address or Group     | ALL    | The selected scene from the source device is copied to all the scenes in the target device(s).                                                       |
| Address | ALL    | Address or Group     | ALL    | All scene levels from the source device are copied to the scenes in the target device(s) (scene 0 copied to scene 0, scene 1 copied to scene 1 etc.) |
| Group   | 0 – 15 | Same as source group | 0 – 15 | For each device in the source group, the source scene is copied to the target scene.                                                                 |
| Group   | 0 – 15 | Same as source group | ALL    | For each device in the source group, the source scene is copied to all the scenes.                                                                   |

If *Live Preview* is enabled:

- Selecting an address/group will cause that address/group to be set at maximum and all others at minimum.
- Selecting a scene will cause that scene to be recalled for the associated source/target device.

*Selectable values:*

- Source (next to “From”) device (A00-A63, G00-G15, ALL) – The address or group of the device(s) containing the source scene(s).
- Source scene (0-15, ALL) – The scene(s) to be copied from the source device(s).
- Target (next to “To”) device (A00-A63, G00-G15, ALL) – The address or group of the device(s) the scene(s) is being copied to.
- Target scene (0-15, ALL) – The scene(s) being copied to. Pressing enter will cause the copy function to be performed.

### Swap Scenes

*Swap Scenes* allows for scenes to be swapped between devices.

|                                |
|--------------------------------|
| -Swap Scenes-                  |
| Swap: <b>G12</b> Scn: <b>5</b> |
| With: <b>G12</b> Scn: <b>0</b> |
|                                |

To swap scenes, two devices and the two scenes to be swapped must be selected. It is also possible to select a group as a device and all scenes as a scene to be swapped. However, not all possible combinations are valid, and the following table outlines the scenarios available when swapping scenes:

| First   |        | Second              |        | Result                                                                                                                                              |
|---------|--------|---------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Device  | Scene  | Device              | Scene  |                                                                                                                                                     |
| Address | 0 – 15 | Address             | 0 – 15 | The selected scene in the first device is swapped with the selected scene in the second device.                                                     |
| Address | ALL    | Address             | ALL    | All scene levels in the first device are swapped with the scenes in second device (scene 0 swapped with scene 0, scene 1 swapped with scene 1 etc.) |
| Group   | 0 – 15 | Same as first group | 0 – 15 | For each device in the selected group, the first selected scene is swapped with the second selected scene.                                          |

If *Live Preview* is enabled:

- Selecting an address/group will cause that address/group to be set at maximum and all others at minimum.
- Selecting a scene will cause that scene to be recalled for the associated device.

*Selectable values:*

- First (next to “Swap”) device (A00-A63, G00-G15, ALL) – The address or group of the device(s) containing the first scene to be swapped.
- First scene (0-15, ALL) – The scene(s) to be swapped from the first device(s).
- Second (next to “With”) device (A00-A63, G00-G15, ALL) – The address or group of the device(s) containing the second scene to be swapped.
- Second scene (0-15, ALL) – The scene(s) to be swapped from the second device(s). Pressing enter will cause the swap function to be performed.

## DALI Types

The Device Types menu provides a summary of the information from a device based on its device type. For DALI devices that have more than 1 type, the settings from both of those types can be displayed by selecting the appropriate type. The pages displayed for each type depends on the type that is selected.

## Summary

*Summary* displays a set of 9 information screens or pages for each address on the DALI line. Primarily the information pages display the common stored settings, although the first page also shows the current arc level and state of the lamp.

The following outlines what is included on each page:

- Page 1 - Current arc power level, lamp status
- Page 2 - Group Assignments
- Page 3 - Stored levels for scenes 0-3
- Page 4 - Stored levels for scenes 4-7
- Page 5 - Stored levels for scenes 8-11
- Page 6 - Stored levels for scenes 12-15
- Page 7 - Stored minimum, maximum and power-on levels
- Page 8 - Stored system failure level, fade time and fade rate
- Page 9 - DALI compliance version, device type and physical minimum level (unchangeable)

Use the increase and decrease buttons to select the address, and use the up and down buttons to scroll through the pages. Also, pressing enter will cause the displayed information to toggle between actual values and alternative values (e.g. will toggle between showing actual levels and percentages for level settings).

The following are examples of the information pages (including the display of both actual values and alternative values where available) for address 4 (note only 1 out of the 4 pages for scenes is shown):

|                       |
|-----------------------|
| -Addr 4 PAGE 1-       |
| Arc Level: 254        |
| Lamp Status: OK       |
| -Addr 4 PAGE 2-       |
| Groups                |
| 0 – x ✓ x x x x x - 7 |
| 0 – x x x x x x x - 7 |
| -Addr 4 PAGE 3-       |
| Scenes 0 – 3          |
| 0: 196    2 : 255     |
| 1: 196    3 : 255     |
| -Addr 4 PAGE 9-       |
| DALI Ver.: 2.0        |
| Device Type: 6        |
| Phys. Min: 1          |

The DALI compliance version (*DALI Ver.*) shown on information page 9 for a device is the compliance version of the device itself, not of the ADDICT®. The ADDICT® only knows of the following device types:

- Type 0 - Standard (used for standard DALI devices that aren't classed as a specific device type and have no extended commands available)
- Type 1 - Emergency
- Type 2 - HID lamp
- Type 3 - LV (low-voltage) halogen
- Type 4 - Incandescent
- Type 5 - Gateway (used for translation between DALI and another protocol)
- Type 6 - LED Module
- Type 7 - Switching (on/off) output
- Type 8 - Colour controller
- Type 9 - Sequencer
- Type 10 - Optical controller

*Selectable values:*

- Addr (0-63) – The address of the device to view the settings for. Pages are scrolled using up and down buttons

## Diagnostics

The *Diagnostics* menu contains functions for testing the devices connected to the DALI line, as well as for testing communication between the devices and other controllers.

### Test Commands

*Test Commands* is used to send DALI commands to addresses, groups or ALL devices, and none of the commands will change any of the stored settings in the devices.

“Devices:ALL” can always be selected even if no devices are responding. This allows for the simple testing commands to be broadcast to determine if a connected DALI device can still receive DALI commands but has a fault and does not reply to DALI commands. DALI V2 commands are also present, such as ‘Identify’

The commands that can be sent are:

- Off – turns the lamp off
- Minimum – lamp level is set to the minimum level
- Maximum – lamp level is set to the maximum level
- Up – lamp level is increased by the number of steps set with fade rate
- Down – lamp level is decreased by the number of steps set with fade rate
- Identify – Identify a device (Only applicable to DALI V2 devices)
- Fade – lamp level is continuously faded between 1% and 100% until enter or escape is pressed.
- Scene X – lamp level is set to the level stored for scene X (unless stored level is MASK)
- Level – sends an Arc Level Command with a selectable intensity

In the example below, the device with address 16 would be set to the level for scene 11.

|                          |
|--------------------------|
| -Test Commands-          |
| Address: <b>16</b>       |
| Command: <b>Scene→11</b> |
|                          |

Note: The commands sent for *Test Commands* will still be sent even if *Live Preview* is disabled.

If *Live Preview* is enabled, selecting an address/group will cause that address/group to be set at maximum and all others at minimum.

#### Selectable values:

- Address/Group (Address:0-63, Group:0-15, Devices:ALL) – The address or group of the device(s) to send a test command to.
- Command (OFF, MIN, MAX, UP, DOWN, FADE, SCENE, LEVEL) – The command to be sent. Press enter to send the command to the selected device(s) (except when SCENE or LEVEL is selected).
- Scene (0-15) – Only available when SCENE is the selected command. Press enter to send a “go to scene X” command to the selected device(s) where X is the selected scene.
- Level (0-255) – Only available when LEVEL is the selected command. Press enter to send a “go to level X” command to the selected device(s) where X is the selected level.

## Chasing

*Chasing* is used to light up addresses or groups within a specified range one after the other. During chasing, the address or group currently being “chased” is set to maximum, and all other devices are set to minimum.

### Quick Chase

The ‘quick’ does not refer to the speed of the chase, rather it means that you want to chase the connected lights one after the other without specifying a start address or group or an end address or group or even the steps – all of which can be done under the Advanced Chase menus. During a quick chase, addresses or groups that aren’t detected on the DALI line will be skipped. Once the last address/group is reached, the chase will start again from the beginning.

### Advanced Chase

A chase can be performed in either direction (i.e. in increasing order or in decreasing order) and how much to increase/decrease by in each step can also be selected. When chasing reaches the last address/group, it will start again from the first address/group and continue doing so until the escape button is pressed.

The example will chase addresses starting at address 6, up to (and including) address 20, in increasing order and every address will be chased (i.e. 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 6, 7, 8 ... etc).

|                 |
|-----------------|
| -Address Chase- |
| Start: 6        |
| End: 20         |
| + Step: 1       |

The direction of chasing depends on whether the end value is greater or less than the start value, and is always indicated by + or – before *Step*. The step value can only be between 1 and the absolute difference between start and end.

#### Selectable values:

- Start (0 - 63 for addresses, 0 – 15 for groups) – the address/group to chase chasing from
- End (0 - 63 for addresses, 0 – 15 for groups) – the last address/group that will be chased before wrapping-around to the start address/group
- Step (1 – diff between start and end) – how many addresses/groups to increment/decrement by during chasing. Press enter to start chasing.

## Sniffing

With *Sniffing*, the ADDICT® no longer behaves as a DALI controller (although it still supplies power to the DALI line if required). Instead, it just “sniffs” for any other activity on the line (between the devices and other controllers) and then records and displays those packets that were detected. The ADDICT® also records the time that each packet was detected (measured in seconds after sniffing was started).

The recorded packets can also be stored in eeprom memory of the ADDICT® (so they’re not lost when the ADDICT® is turned off) and can even downloaded to a PC for further analysis.

The *Sniffing* menu item is in fact a menu itself, and contains the following four menu items:

- Start Sniffing

- Recall Data
- Store Data
- Sniff to PC

### ***Start Sniffing***

The ADDICT® will start sniffing the DALI line until the user presses enter, or 250 packets are received. Every 2 hours, if the 250-packet limit has not been reached, the time will reset to start from 0 again. When a packet is detected during sniffing, its contents are displayed on the screen (as well as the number of recorded packets).

The following show the screen before any packets have been detected, and the screen after 24 packets have been detected so far with the last packet being a “Maximum” command to the device with address 4.

| -Sniff DALI-    | -Sniff DALI-    |
|-----------------|-----------------|
| Packets: 0/250  | Packets: 24/250 |
|                 | M→ A04 Maximum  |
| (ENTER to Stop) |                 |

During sniffing, the ADDICT® will store the detected packet data in its volatile RAM memory. This means that the data will be lost if the ADDICT® is turned off or the data will be overwritten if sniffing is started again. To prevent this data from being lost or overwritten, the ADDICT® contains two sections in its eeprom (designated *Alpha* and *Beta*) that can each store a block of 250 packets and be later recalled after the ADDICT® has been turned off or sniffing was restarted.

When sniffing has been stopped (by one of the conditions mentioned above), the ADDICT® displays the packets that were detected during sniffing. Since this is the same as what is displayed under *Recall Data*, it will be described in that section.

Note: sniffing can also be stopped by pressing escape, but the ADDICT® will show the *Sniffing* menu instead of the *Recall Data* screen. However, the packets that were detected before escape was pressed can still be displayed by going to *Recall Data*.

*Selectable values: none*

### ***Recall Data***

*Recall Data* is a menu with four options:

- Recall Last – display the packets most recently sniffed
- Recall Alpha – display the packets that are stored in the *Alpha* eeprom memory location
- Recall Beta – display the packets that are stored in the *Beta* eeprom memory location
- Send all to PC – transmits all the stored packet data (in Last, Alpha and Beta) via the PC communications link

After selecting one of the *recall* options, the packet display screen is shown.

The following example shows that the 4<sup>th</sup> detected packet was a “Query Ballast” command from a master (another term for controller) to the device with address 3, 16.06s after the ADDICT® started sniffing. A reply of FF (in hexadecimal, 255 in decimal, and indicates a “yes” reply to the query command) is also shown, and was detected 0.01s later.

| -Sniff DALI- |        | -Sniff DALI- |        |
|--------------|--------|--------------|--------|
| 4/250        | 16.06s | 5/250        | 16.07s |
| M→ A03 Query |        | REPLY FF     |        |
| Ballast      |        |              |        |

Replies are always 1 byte, and are always displayed in hexadecimal.

Pressing enter will cause the screen to toggle between showing a decoded description of the packet and the raw packet data (shown as a hexadecimal value). The following example shows a “go to scene 6” command sent from a master to all devices in both descriptive and raw format.

| -Sniff DALI-   |          | -Sniff DALI-   |          |
|----------------|----------|----------------|----------|
| 132/250        | 1053.19s | 132/250        | 1053.19s |
| M→ ALL Scene 6 |          | 2 – BYTE: FF16 |          |
|                |          |                |          |

Note: the raw hexadecimal packet data will only make sense if a listing of DALI commands and their respective codes is available to the user. It was included to allow for the display of any “extended” DALI commands used by a controller that would normally be specific to a device and unknown to the ADDICT®.

Commands sent from a controller to a DALI device (also known as a slave device) are always 2 bytes long for standard DALI (e-DALI is 3-bytes long).

The following example shows two consecutive packets detected 1s apart. It also shows that the device with address 14 does not have a lamp failure since it didn’t respond to the query command and therefore the second screen shows the ADDICT has moved on to the next address to query its lamp status.

| -Sniff DALI- |        | -Sniff DALI- |        |
|--------------|--------|--------------|--------|
| 222/250      | 76.00s | 223/250      | 77.00s |
| M→ A14 Query |        | M→ A15 Query |        |
| Lamp Fail    |        | Lamp Fail    |        |

Since it is possible for DALI devices to have different replies to the same query command (and different response times), typically a query command sent to more than one device will cause invalid data to be generated on the line. However, these situations can sometimes still produce usable information.

The following example shows a “query lamp failure” command sent to group 0, and 0.01s later invalid data was detected on the line, indicating that more than one device in group 0 tried to respond with YES (or FF) to the query. Therefore, at least two devices in that group have lamp failures. See *Error or Yes* details below.

| -Sniff DALI- |         | -Sniff DALI- |        |
|--------------|---------|--------------|--------|
| 37/250       | 418.46s | 38/250       | 418.47 |
| M→ G00 Query |         | ERROR or YES |        |
| Lamp Fail    |         |              |        |

Most of the DALI commands that can be sent from a master to slave can have either a single address, a group of devices or all devices as their target (as shown in the above example by the different M→ commands). However, there are a set of “special” commands that are always sent to all devices (although not all the devices may react to the command, depending on the situation). When displaying a packet (with descriptive display mode selected) these are prefixed with “SPEC.”

The following examples show a “store 128 in the DTR (Data Transfer Register)” command and an “Initialise New Devices” (i.e. devices without addresses) command.

| -Sniff DALI-   |         | -Sniff DALI-    |        |
|----------------|---------|-----------------|--------|
| 50/250         | 165.84s | 1/250           | 20.29s |
| SPEC. 128→ DTR |         | SPEC. Init. NEW |        |
|                |         |                 |        |

Newer DALI protocols define 3-byte e-DALI commands that can be sent between controllers on a DALI line and will be ignored by slave devices. The ADDICT® can sniff these 3-byte commands during sniffing, but will show only the raw hex values.

| -Sniff DALI-   |         |
|----------------|---------|
| 255/250        | 236.31s |
| E-DALI: 145C30 |         |
|                |         |

#### Selectable values:

- Packet number (1 – number of packets) – The packet data will be displayed as the packet number is being selected

*Error or Yes:*

An Error or Yes may appear on the screen under a few conditions. On the ADDICT V3, the most likely reason for the result will also be shown on the screen with the following message:

- “Half b <300us” – The DALI Half bit was less than 300us causing an error
- “Long b <600us” – The DALI Long bit was less than 600us causing an error
- “Incorrect Bit” – The DALI Bit was incorrect, expected a 0, got a 1.
- “Long >1100us” – The DALI Long bit was too long
- “Bus Low Long” – The DALI Bus was held low for too long causing an error
- “Unknown” – Most likely a YES response, otherwise unknown DALI error.

If the *Send all to PC* menu item is selected, the ADDICT® will transmit all the recorded and stored packet data via the PC communications link to a PC (or any device capable of receiving RS-232 serial data).

The following is an example of what is transmitted by *Send all to PC*:

```
#ADDICT 1.0 Sniffed packet data
#Last
15.91s 0191 M>A00 Query Ballast
15.96s 0391 M>A01 Query Ballast
16.01s 0591 M>A02 Query Ballast
16.06s 0791 M>A03 Query Ballast
16.07s FF
16.10s 0799 M>A03 Query Dev. Type
16.11s 00

#Alpha
5.39s A3FF SPEC. 255>DTR
5.43s FF80 M>ALL Store DTR> Address
5.47s FF80 M>ALL Store DTR> Address
5.50s A3FF SPEC. 255>DTR
5.54s FF80 M>ALL Store DTR> Address
5.57s FF80 M>ALL Store DTR> Address
5.61s A100 SPEC. Terminate
5.65s A100 SPEC. Terminate
5.80s A500 SPEC. Init. ALL
5.84s A500 SPEC. Init. ALL
5.99s A700 SPEC. Randomise
6.02s A700 SPEC. Randomise
6.18s FF06 M>ALL Minimum
6.33s B5FF SPEC. 255>Search Addr. Low
6.37s B3FF SPEC. 255>Search Addr. Mid
6.40s B1FF SPEC. 255>Search Addr. High
6.44s A900 SPEC. Compare
6.49s A900 SPEC. Compare
6.54s B5FF SPEC. 255>Search Addr. Low
6.58s B3FF SPEC. 255>Search Addr. Mid
6.62s B1FF SPEC. 255>Search Addr. High
6.65s A900 SPEC. Compare
6.70s A900 SPEC. Compare
6.76s B5FF SPEC. 255>Search Addr. Low
6.79s B3FF SPEC. 255>Search Addr. Mid
6.83s B1FF SPEC. 255>Search Addr. High
6.87s A900 SPEC. Compare
6.92s A900 SPEC. Compare
6.97s A100 SPEC. Terminate
7.00s A100 SPEC. Terminate

#Beta
No packets
```

The time stamp indicates how many seconds after sniffing was started that the packet was detected, and that is followed by the 2-bytes of raw hexadecimal data for commands or 1-byte of data for replies. Following the raw data for commands, as per the example above, is a description of what that command is (same as what is displayed when displaying the sniffed packets on the ADDICT®).

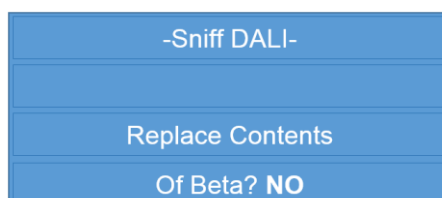
For 3-byte e-DALI commands, only 3-bytes of raw hexadecimal is transmitted with no description as the ADDICT cannot know manufacturer-specific E-DALI 3-byte commands (OEMs wanting to add this to the ADDICT for their products should contact Creative Lighting).

### ***Store Data***

*Store Data* is a menu with two items:

- Last to Alpha – store the most recently sniffed packet data in the Alpha eeprom location
- Last to Beta – store the most recently sniffed packet data in the Beta eeprom location

After one of the *Store Data* menu options has been selected a confirmation screen is displayed (unless there are no packets to be stored), since all data currently stored in that location will be overwritten with the new packet data (even if the number of new packets is less than what was currently stored).



After confirming, the stored packets can be viewed at any time (even after the ADDICT® has been switched off) under the *Recall Data* menu.

*Selectable values:*

- Confirmation (YES, NO) – Press enter to confirm storing packet data to eeprom, YES to store, NO to cancel

### ***Sniff to PC***

*Sniff to PC* is like the standard sniffing mode, except the detected packet data is transmitted via a PC communications link to a PC (or other device capable of receiving RS-232 serial data) instead of being recorded by the ADDICT®. This allows for an unlimited number of DALI packets to be detected (instead of a maximum of 250), however the ADDICT® will still reset the time to 0 every 2 hours and will stop if the escape button is pressed.

See page 12 for more details of what is required for PC communications.

The following is an example of the data transmitted by the ADDICT® during *Sniff to PC*:

```
#ADDICT 1.0 Sniffed packet data
#Live
15.91s 0191 M>A00 Query Ballast
15.96s 0391 M>A01 Query Ballast
16.01s 0591 M>A02 Query Ballast
16.06s 0791 M>A03 Query Ballast
16.07s FF
16.10s 0799 M>A03 Query Dev. Type
16.11s 00
```

The data transmitted for each sniffed packet is the same as that sent with *Send all to PC* on the previous page.

*Selectable values: none*

## Count Devices

*Count Devices* scans the DALI line and displays a count of the number of addresses, groups and reported lamp failures currently on the line. During scanning, a progress bar is displayed as shown in the following:

|                 |
|-----------------|
| -Count Devices- |
|                 |
| Scanning ...    |
| [ ----- ]       |

The following example shows that 10 addresses were detected on the DALI line, as well as 4 groups and one of the 10 addressed devices is reporting a lamp failure.

|                 |
|-----------------|
| -Count Devices- |
| Addresses: 10   |
| Groups: 4       |
| Failures: 1     |

Press enter or escape to return to the menu.

## Check Failures

*Check Failures* scans the DALI line for devices reporting that their lamps have failed. If any devices report a failure the ADDICT® will display which addresses have lamp failures and which do not.

The following examples show that the device with address 29 is reporting a lamp failure and the device with address 45 isn't reporting a lamp failure.

|                  |
|------------------|
| -Check Failures- |
| Address: 29      |
| Lamp Failure ✓   |
|                  |

|                  |
|------------------|
| -Check Failures- |
| Address: 45      |
| Lamp Failure ✕   |
|                  |

The address is selected using the increase + and decrease - buttons. If *Auto-scan* is disabled, only addresses reporting lamp failures can be selected.

Note: some DALI devices are unable to detect when they have a failed lamp, so they will not be able to report lamp failures. Also, the status of the lamp failure for a selected address is not updated while that address is selected, but will be updated when the address selection is changed.

*Selectable values:*

- Address (0 – 63) – The address of the device being interrogated for a lamp failure

## **Advanced**

The *Advanced* menu contains functions which go beyond simple installation and configuration of DALI devices.

### **SCI (Serial Communications Interface) Mode**

*SCI Mode* allows an external controller (such as a PC) to communicate to devices on the DALI line using the RS-232 serial communication protocol.

An example of a PC software package that can communicate with the ADDICT® using SCI Mode is WinDim by Tridonic.

Currently, details of the serial commands that are sent and received during SCI Mode are not specified in this manual. However, these specifications can be requested by contacting Creative Lighting.

Pressing escape will exit out of *SCI Mode*.

Note: *SCI Mode* is different to *SCI TX Mode* option available under *Addict Options*. In SCI TX Mode, the ADDICT® sends SCI commands to an external controller, whereas in SCI Mode, the ADDICT® receives SCI commands and translates them to the DALI line.

### **Capturing**

*Capturing* is used to back up and store a local copy of all (common stored) settings for one or more devices on the DALI line. Once the settings are stored, they can be programmed back into the devices later (e.g. if one or more fittings were replaced) and even transmitted to and from a PC.

Stored settings are also associated with a “Bus ID” which is a number from 0 to 99 that allows for distinction between devices from different buses (lines). To prevent ambiguity, there cannot be duplicate addresses within a bus ID, and trying to store settings using an address/bus ID combination that is already stored in the ADDICT® will cause the stored settings to be overwritten by the newly captured settings. This means that each bus ID can have a maximum of 64 stored settings associated with it. It is also up to the user to keep track of which DALI line a bus ID is used for (e.g. bus ID 10 is the Dali Line in the front office, bus ID 11 is kitchen etc).

The ADDICT® itself can store the settings for a total of 250 devices, however virtually any number can be stored if they are transmitted and saved onto a PC. The term “slot” is sometimes used when referring to a section of memory that can hold the stored settings for a single device.

Note: the ADDICT® only enforces unique combinations of bus ID’s and addresses for settings stored in its memory, which means that it is possible for duplicate bus ID’s and addresses to exist when they are stored on a PC. However, when the stored settings are uploaded back to the ADDICT®, it will make sure that no duplicates are used.

The following five menu items are found under *Capturing*:

- Capture All
- Capture 1 by 1
- View Stored
- Transmit to PC
- Delete Stored

**Capture All**

*Capture All* will capture the stored settings for all devices currently connected to the DALI line and associate them with the same bus ID.

The first screen displayed for *Capture All* selects the bus ID that will be associated with the stored settings. As a bus ID is being selected, the number of devices currently stored with that bus ID is also shown.

The following examples show that bus ID 4 already has 21 devices stored for it, and bus ID 56 currently has none:

|               |               |
|---------------|---------------|
| -Capture All- | -Capture All- |
| Bus ID: 4     | Bus ID: 56    |
| # Devices: 21 | # Devices: 0  |
|               |               |

After a bus ID has been selected, the ADDICT® will scan the DALI line to check how many new slots will be required, and how many slots will be updated (if the bus ID and address combination already exists). It also briefly shows how many slots are not currently being used. If the number of new slots is more than the number of free slots, *Capture All* will not proceed.

The ADDICT® will ask for confirmation before capturing the stored settings, as shown in the following example (the example also shows the “free slots” before confirmation is asked):

|                   |                   |
|-------------------|-------------------|
| -Capture →ID 13-  | Capture →ID 13-   |
| # on DALI bus: 15 | # on DALI bus: 15 |
| # new slots: 4    | # new slots: 4    |
| # free slots: 210 | Capture? NO       |

After confirmation, the ADDICT® will capture and store the settings from all devices on the currently connected DALI line.

**Selectable values:**

- Bus ID (0 – 99) – the bus ID to associate with the stored settings
- Confirmation (YES, NO) – Press enter to confirm *Capture All*, YES to start capturing, NO to cancel

**Capture 1 by 1**

*Capture 1 by 1* stores the common settings for just a single device on the DALI line. When storing the settings, the selected address and bus ID will be checked to see if the selected combination is already in use, in which case the current settings stored in the ADDICT® will be overwritten. Otherwise, a new memory slot will be used for the settings.

During selection of the bus ID and device address, the ADDICT® will indicate whether a new slot will be required or old data will be updated, as shown in the following examples:

|                    |                    |
|--------------------|--------------------|
| -Capture 1 by 1-   | -Capture 1 by 1-   |
| Bus ID: <b>63</b>  | Bus ID: <b>77</b>  |
| Address: <b>46</b> | Address: <b>46</b> |
| (new slot)         | (update slot)      |

After the bus ID and address have been selected, the ADDICT® will ask for confirmation for capturing. If a new slot is required and there isn't a free slot available, capturing will not proceed.

*Selectable values:*

- Bus ID (0 – 99) – the bus ID to associate with the stored settings
- Address (0 – 63) – the address of the device to store the common settings for. Press enter to proceed to confirmation
- Confirmation (YES, NO) – Press enter to confirm *Capture 1 by 1*, YES to start capturing, NO to cancel

**View Stored**

*View Stored* allows a bus ID to be selected and then addresses associated with that bus ID can be viewed (within the data stored in the ADDICT®).

The following examples show that there are stored settings for address 2 with bus ID 15, and address 50 with bus ID 50.

|                   |                    |
|-------------------|--------------------|
| -View Stored-     | -View Stored-      |
| Bus ID: <b>15</b> | Bus ID: <b>50</b>  |
| Address: <b>2</b> | Address: <b>50</b> |
|                   |                    |

Note: only one address is displayed at a time, and other addresses for the selected bus ID can be displayed by navigating down to the address.

A bus ID of “ALL” can also be selected, which shows how many slots out of the total of 250 are currently being used:

|                    |
|--------------------|
| -View Stored-      |
| Bus ID: <b>ALL</b> |
| Slots: 103/250     |
| [ - - - - - ]      |

*Selectable values:*

- Bus ID (0 – 99, ALL) – the bus ID's used when storing settings (only used bus ID's can be selected)
- Address (0 – 63) – one of the addresses associated with the selected bus ID

**Transmit to PC**

*Transmit to PC* sends all the device settings that are currently stored in the ADDICT® to a PC (or other device capable of receiving RS-232 serial data) via the PC communications link. Note that the current version of the Terminal-compatible PC comms is listed correctly in the data set as "1.0". The following is an example of the data that is sent:

```
#ADDICT 1.0 Captured settings data
#bus_id addr grps_0-7 grps_8-15 min max fade_time&rate power_on sys_fail scenes*16 xor_checksum
00 01 09 02 01 FE 07 FE FE FE FE FE 01 01 01 01 FE FE FF FF FF FF FF FF 00 01
00 02 0A 02 01 FE 07 FE FE 01 E5 FE FE FE D2 01 01 01 FF FF FF FF FF FF 00 34
00 03 04 00 83 D4 87 FE FE 01 01 01 01 FE FE FE FE C3 FF FF FF FF FF FF 00 19
00 04 00 00 01 FE 07 FE FE C4 DD EC F6 FE FF FF FF FF FF FF FF FF FF FF FF F9
01 01 00 00 01 FE 07 FE FE FF FF FF FF FF FF FF FF FF FF FF FF FF FF FC
01 02 00 00 01 FE 07 FE FE FF FF FF FF FF FF FF FF FF FF FF FF FF FF FD
01 03 00 00 01 FE 07 FE FE C4 DD EC F6 FE FF FF FF FF FF FF FF FF FF FF FF F8
01 04 00 00 01 FE 07 FE FE C4 DD EC F6 FE FF FF FF FF FF FF FF FF FF FF FF F0
.
```

All data is sent as 2-digit hexadecimal values, and there is one line for each device. A header line is also transmitted explaining what each value represents. The final value is an XOR checksum (it is the XOR sum of all the preceding values) and can be used as a simple method for detecting errors in the data. The last line starts with a "." indicating the end of the data.

**Delete Stored**

*Delete Stored* allows device settings stored in the ADDICT® to be deleted (it does not affect the settings in any actual devices currently connected to the DALI line). Memory slots are deleted by bus ID (or all slots can be deleted at once). Note: it is not possible to delete the settings for just a single address, but all addresses for a selected bus ID will be deleted.

When selecting a bus ID, the number of addresses associated with that bus ID (and hence the number of slots that will be deleted) is displayed:

|                 |                 |
|-----------------|-----------------|
| -Delete Stored- | -Delete Stored- |
| Bus ID: 23      | Bus ID: ALL     |
| # Devices: 7    | # Devices: 95   |
|                 |                 |

After a bus ID (or ALL) is selected, confirmation is required before the slots will actually be deleted.

**Selectable values:**

- Bus ID (0 – 99, ALL) – device settings for addresses associated with the selected bus ID will be deleted. Press enter to proceed to confirmation
- Confirmation (YES, NO) – Press enter to confirm deletion of slots, YES to delete, NO to cancel

## Programming

*Programming* is used to copy the stored settings for a device (obtained by *capturing*) from the ADDICT® into a DALI device. Refer to the section on *Capturing* on page 35 for more information regarding storing settings for a device.

The following four menu items are found under *Programming*:

- Program All
- Program 1 by 1
- View Stored
- Recv. from PC

### ***Program All***

*Program All* is used to copy the stored settings for all the devices associated with a selected bus ID.

When using *Program All*, the ADDICT® will try to match up addresses stored in the ADDICT® for the selected bus ID to those of the devices currently on the DALI line to which the ADDICT is connected. It will then display how many addresses matched, how many were not found on the line (but are stored in the ADDICT®) and how many were not stored in the ADDICT® (but are connected to the DALI line).

In the following example, bus ID 47 is selected, and after scanning the DALI line, 6 addresses in the stored settings for bus ID 47 matched addresses on the line, 2 addresses that were stored were not found on the DALI line, and 11 addresses found on the DALI line were not in the stored settings:

|                 |                        |
|-----------------|------------------------|
| -Program All-   | -ID 47 →Program -      |
| Bus ID: 47      | Match: 5 Go? <b>NO</b> |
| (Conflicts will | Not on bus: 2          |
| be displayed)   | Not in slots: 11       |

Confirmation is still required before the settings of the device(s) on the DALI line are programming. If there are no matching pairs of addresses found, it is not possible to select YES for the confirmation.

Once confirmed, the ADDICT® will program the settings for the device(s) with matching addresses, displaying how many devices have been programmed and how many did not have matching addresses and were therefore skipped.

The following example shows the screen when it's currently up to programming address 24 and 5 devices (with addresses less than 24) have been programmed and 8 have been skipped:

|                   |
|-------------------|
| -ID 47 →Program - |
| Programming...24  |
| # Devices: 5      |
| # Skipped: 8      |

*Selectable values:*

- Bus ID (0 – 99) – the bus ID associated with the stored settings to be programmed into the connected DALI devices. Only existing bus ID's can be selected. Press enter to proceed to confirmation
- Confirmation (YES, NO) – Press enter to confirm *Program All*, YES to start programming, NO to cancel

**Program 1 by 1**

*Program 1 by 1* allows the programming of stored settings for one device at a time. *Program 1 by 1* also doesn't require that the address stored in the ADDICT® and the address of the device on the line match.

The first example shows the device with address 41 on the DALI line being programmed with the stored settings with the same address under bus ID 2. The second example shows the device with address 0 on the DALI line being programmed with the stored settings of address 37 from bus ID 93:

|                  |                  |
|------------------|------------------|
| -Program 1 by 1- | -Program 1 by 1- |
| Bus ID: 2        | Bus ID: 93       |
| Source Addr: 41  | Source Addr: 37  |
| Target Addr: 41  | Target Addr: 0   |

After selecting the bus ID, source and target addresses, further confirmation is still required before the device will be programmed.

**Selectable values:**

- Bus ID (0 – 99) – the bus ID associated with the stored settings to use when programming (only existing bus ID's can be selected)
- Source Addr (0 – 63) – the stored settings with the selected source address (and bus ID) will be used during programming (only addresses that are stored can be selected)
- Target Addr (0 – 63) – the address of the device on the DALI line to be programmed. Press enter to proceed to confirmation
- Confirmation (YES, NO) – Press enter to confirm *Program 1 by 1*, YES to start programming, NO to cancel

**View Stored**

*View Stored* for programming is identical to *View Stored* found under capturing (see page 37).

**Recv. from PC**

*Recv. from PC* receives device settings data from a PC (or other device capable of transmitting RS-232 serial data) and stored it in the ADDICT®. The format of the data is the same as that sent using *Transmit to PC* under capturing (see page 38).

After each line of data is received (with no detected errors), the data contained in that line is stored into a device settings memory slot in the ADDICT®. The slot chosen depends if the combination of address and bus ID from the received data exists in the ADDICT® already. If it already exists, the slot with that address and bus ID is overwritten. Otherwise a free slot is used if available.

While receiving the data, the number of slots that have been used (either new or updated) is displayed, as well as the number of free slots that can still be used.

The following example shows that (so far) 10 new slots have been used, 31 existing slots have been updated (therefore 41 lines of data have been received) and there are still 138 free slots available:

|                   |
|-------------------|
| -Recv. From PC -  |
| # new slots: 10   |
| # updated: 31     |
| # free slots: 138 |

*Recv. from PC* will end if the escape button is pressed or the designated end of file character "." is received at the beginning of a line.

Any lines starting with the comment character "#" will be ignored.

If an error is detected with the received data, the current line of data will be ignored and the ADDICT® will ignore any data that is further received. The ADDICT® will then display the line of data (counting since receiving was started) that the error occurred in and a brief description of the error.

The following example shows that line 21 did not contain enough data values:

|                  |
|------------------|
| -Recv. From PC - |
| Error in data... |
| Line: 21         |
| Not enough data  |

Following is a list of possible error messages:

- *Bad char @ SOL* – the first character of a line (ignoring whitespace) was invalid (must be the start of a 2-digit hexadecimal value, the comment character "#" or the end of data character ".")
- *Not 2-digit hex* – one of the data values was not a valid 2-digit hexadecimal number
- *Too many values* – there were too many data values in the line
- *Missing space* – whitespace is missing between data values
- *Checksum diff.* – the received XOR checksum did not match the checksum of the data values
- *Missing LF char* – a LF (line-feed) character was missing at the end of the line (end of line should be CRLF)
- *Missing CR char* – a CR (carriage-return) character was missing at the end of the line
- *Internal timeout* – the ADDICT® did not completely store the previous line of data before this line was received
- *RS232 frame Err.* – there was an error with the underlying RS-232 serial data
- *Not enough data* – the line did not contain enough data values

*Selectable values: none*

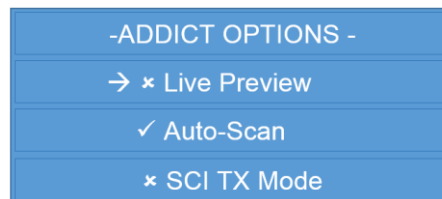
## ***ADDICT Options***

*ADDICT Options* is a special menu with three items:

- Live Preview
- Auto-Scan
- SCI Tx Mode

See page 11 for explanations of how these options affect DALI functionalities.

Each option will have either a tick or a cross next to it depending on whether that option is currently enabled (a tick) or disabled (a cross). In the following example, *Live Preview* and *SCI TX Mode* are currently disabled, and *Auto-Scan* is enabled.



To toggle the current setting for an option, navigate to it (in the same way all menus are navigated) and press enter.

The options under *ADDICT Options* only apply to DALI functionality, and do not affect the operation of DMX<sub>512</sub>.

## DMX<sub>512</sub> and RDM (Remote Device Management) Functionality

The *DMX<sub>512</sub>* & *RDM* menus contains all the *DMX<sub>512</sub>* and *RDM* functions available with the ADDICT®. They provide a few quick and easy options for testing both *DMX<sub>512</sub>* masters/controllers and slaves/devices (under the *DMX<sub>512</sub>* menu), as well as advanced configuration options for devices implementing the Remote Device Management protocol (under the *RDM* menu).

Note: all channel levels for *DMX<sub>512</sub>* are displayed by the ADDICT® as a number between 0 and 255 – no conversion to percentages is performed.

### Test DMX512 – Test Channels

With *Test Channels*, the ADDICT® behaves as a *DMX<sub>512</sub>* master and will generate a *DMX<sub>512</sub>* signal for 512 channels, and the levels for every channel in that *DMX<sub>512</sub>* “universe” (i.e. channels 1-512) can be individually controlled.

*Test Channels* begins by requesting the starting range of channels to be tested, as shown in the following example:

|                 |
|-----------------|
| -Test Channels- |
| Starting        |
| Range: 22-29    |
|                 |

This is just the range of channels that are initially displayed on the screen, and this range can be changed during testing. Note that only the lower value is selected for the range – the other value is always 7 more.

After the starting channel range is selected, the ADDICT® will display the 8 channels in the starting range and their current values in the form xxx:yyy where xxx is the channel and yyy is the level. Initially, the levels of all channels (1-512) will be 0.

The channels and their values are navigated and selected in a similar fashion to other ADDICT® screens – pressing the increase or decrease button will change the currently selected channel level and pressing up or down will move to the previous or next channel respectively. Navigating past the first or last channel on the screen will also change the range of channels shown.

Pressing enter will cause the selected channel to continuously fade up and down until enter is pressed again. When a channel is fading, pressing the down button will cause the next channel after the selected channel to also fade as a “fine” dimming channel. This will allow for devices with 16-bit channels (i.e. intensity/position etc. is defined as the combination of two sequential channel levels) to be better tested. Pressing the up button will change back to single channel fading. During fading, the increase and decrease buttons will have no effect.

The following examples show the initial channel levels for the starting range of 22-29 and after the channel levels have been changed.

|       |       |         |         |
|-------|-------|---------|---------|
| 22: 0 | 26: 0 | 22: 0   | 26: 8   |
| 23: 0 | 27: 0 | 23: 20  | 27: 0   |
| 24: 0 | 28: 0 | 24: 225 | 28: 188 |
| 25: 0 | 29: 0 | 25: 100 | 29: 90  |

Note: any changes made to a channel level will instantly affect that channel level in the DMX512 output signal, i.e. the enter button does not need to be pressed to change the output level.

*Selectable values:*

- Starting Range (lowest value, 1 – 505) – the initial range of values to be displayed on the screen. Press enter to start generating DMX<sub>512</sub>.
- 8 x channel levels (0 – 255) – level to be sent for that channel

### Test DMX<sub>512</sub> – All Channels

As with *Test Channels*, the ADDICT® also behaves as a DMX<sub>512</sub> master for *All Channels*.

*All Channels* has a similar functionality to *Test Channels*, except that all channel levels are changed at once instead of individual channels. The following example shows that all DMX512 channels (1-512) will be set to level 72.

|                 |
|-----------------|
| -All Channels - |
|                 |
| Level : 72      |
|                 |

Pressing the increase and decrease button will change the level of all channels, and pressing enter will cause all channels to continuously fade up and down until enter is pressed again.

Note: the channel level that is selected using *All Channels* will override any individual levels selected using *Test Channels*.

### Test DMX<sub>512</sub> – Chase Channels

As with *Test Channels*, the ADDICT® also behaves as a DMX512 master for *Chase Channels*.

*Chase Channels* with DMX512 works the same way as DALI chasing (see page 27) with a couple of exceptions:

- can only chase by channel (instead of either by addresses or by groups).
- the “step” can also be selected as 0, which will cause all channels between start and end to “strobe” between 0 and 255 every 2 seconds.

*Selectable values:*

- Start (1 – 512) – the channel to chase chasing from
- End (1 – 512) – the last channel that will be chased before wrapping-around to the start channel
- Step (0 – diff between start and end) – how many channels to increment/ decrement by during chasing (or 0 to strobe). Press enter to start chasing.

## Test DMX<sub>512</sub> – Sniff Channels

With *Sniff Channels*, the ADDICT® behaves as a DMX<sub>512</sub> slave, and only receives a DMX<sub>512</sub> signal. During sniffing, the ADDICT® will display the levels that are currently being received for a range of 8 channels at a time.

*Sniff Channels* begins by requesting the starting range of channels to be displayed, as shown in the following example:

|                  |
|------------------|
| -Sniff Channels- |
| Starting         |
| Range: 354-361   |
|                  |

This is just the range of channels that are initially displayed on the screen, and this range can be changed during testing. Note that only the lower value is selected for the range – the other value is always 7 more.

After the starting channel range is selected, the ADDICT® will display the sniffed levels for the 8 channels in the starting range:

|          |    |         |
|----------|----|---------|
| 354: 216 |    | 358:133 |
| 355: 240 | RX | 359: 3  |
| 356: 75  |    | 360: 60 |
| 357: 81  |    | 361:107 |

If the ADDICT® is receiving a valid DMX512 signal, “RX” will be displayed on the screen. If it stops receiving a valid signal for at least a second, “RX” will disappear until a valid signal is received again, but the most recently received levels will still be displayed.

To change the range of channels displayed, press the up and down buttons to decrement and increment the channels respectively.

Pressing enter will cause the display to be paused and all levels (even those outside the currently displayed range) will not change from their current values until sniffing is unpaused by pressing enter again. When sniffing is paused, “PA” is displayed on the screen:

|          |    |         |
|----------|----|---------|
| 354: 216 |    | 358:133 |
| 355: 240 | RX | 359: 3  |
| 356: 75  | PA | 360: 60 |
| 357: 81  |    | 361:107 |

Note that even while paused, “RX” still indicates whether a valid DMX512 signal is currently being received.

It is also possible that the controller generating the DMX512 signal may not be sending levels for all 512 channels, and the ADDICT® indicates this by showing a channel level as “---” if it hasn’t received a level for that channel.

### RDM Setup – Identify All

*Identify All* sends a command to all RDM compliant devices (currently connected via the DMX512 interface cable) instructing them to begin their identification procedure.

|                |     |
|----------------|-----|
| -Identify All- |     |
|                |     |
| Identifying    | ... |
| (ESC to Stop)  |     |

How a device should identify itself is not specified by RDM, and the response to an identify command depends on the device’s manufacturer (some may flash the lamp, display something on an LCD etc).

Pressing escape will send a command to stop identification and then return to the *RDM Setup* menu.

### RDM Setup – Count Devices

*Count Devices* uses discovery commands to count how many RDM compliant devices are currently connected via the DMX512 interface cable.

|                 |   |
|-----------------|---|
| -Count Devices- |   |
|                 |   |
| # Devices :     | 0 |
| Counting ...    |   |

As devices are discovered, the number displayed will increase until all devices have been counted, at which time the last line of the display will also read “Complete”.

Pressing escape while devices are being counted will return to the *RDM Setup* menu. Once counting is complete, pressing enter or escape will return to the menu.

### RDM Setup – Setup Devices

*Setup Devices* allows you to scroll through the connected RDM devices connected, and view and modify their current RDM-based settings. Note that not all RDM commands are currently supported by the ADDICT®, but they may be included in future releases.

|                   |      |
|-------------------|------|
| -Select Device-   |      |
| UID: 00A112345678 |      |
| DMX Addr :        | 1- 3 |
| SLAMMO - Creativ  |      |

The first screen under *Setup Devices* is the *Select Device* screen. On this screen, the only selectable value is the 12-digit device UID (a device's unique ID, every individual device will have a unique identifier). Since the device UID does not reveal much about the device, the screen also displays the device's DMX address range (which is all the DMX<sub>512</sub> channels that the device will currently respond to) as well as three labels showing the model, manufacturer and a programmable device label (up to 16 characters will be displayed for each of the labels, and the line will continually scroll if all the labels cannot be displayed at once).

In the example above, the following information is displayed about the selected device:

- Its UID is 00A112345678 (which is unique to this device).
- Its DMX address range is 1 to 3 (its start address is 1, and it responds to 3 channels).
- When it's scrolling, the last line will read SLAMMO – Creative Lightin – (White LEDs only), which means that the device model is a SLAMMO, it's manufacturer is Creative Lightin (the "g" has been cut off because only the first 16 characters can be displayed here), and its programmable device label is currently saying that it is "White LEDs only".

Pressing the increase/decrease button will scroll to the next/previous device UID that can be discovered (wrapping around at the ends of the UID range). Pressing enter will start setting up the selected device. Pressing escape will return to the *RDM Setup* menu.

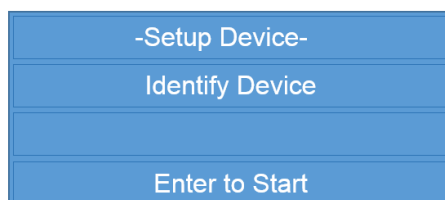
The process for setting up an RDM device is split up into pages, with one page dedicated to each RDM parameter (i.e. command) supported by the device. Navigation between the pages is achieved by using the up and down buttons, and pressing escape will return to the *Select Device* screen. Depending on the currently selected page, the increase, decrease and enter buttons will have different effects.

There are two types of RDM parameter: standard and manufacturer-specific. Standard parameters (if implemented) will have the same functionality for all RDM devices. A few standard parameters must be handled by all devices, but many of them are optional. Manufacturer-specific parameters are all optional and will only have the same functionality for devices from the same manufacturer (if implemented).

When entering the *Setup Device* pages, one of the required standard parameters will always be shown first. The following sections outline the setup pages for the required standard parameters (the order of these pages will be the same regardless of device).

#### ***Setup Device – Identify Device (standard, required)***

The *Identify Device* page allows for the selected device to start or stop its identification process. Pressing enter will cause the device to toggle between identifying and not identifying.



#### ***Setup Device – DMX Start Address (standard, required)***

The *DMX Start Address* page is used to set the current starting DMX address for the device. If the device listens to more than one consecutive DMX channel, this is the first channel in that range.

|                |
|----------------|
| -Setup Device- |
| DMX Start      |
| Address: 25    |
|                |

The increase and decrease buttons change the value shown for the address, and pressing enter saves the new value into the device. Once set, the address is retrieved again from the device for confirmation.

### ***Setup Device – Device Info (standard, required)***

The *Device Info* page contains four subpages that display various information about the selected device. Use the increase and decrease buttons to navigate between the subpages.

Page 1 shows the selected device's effective DMX512 address range, as well as the currently selected DMX personality (DMX personalities are explained on page 44).

|                   |
|-------------------|
| -Setup Device-    |
| Device Info Pg 21 |
| DMX Addr: 245-250 |
| Personality: 1/ 2 |

Page 2 shows the selected device's product category (shown as hexadecimal values, refer to the RDM standard for meanings of the values) and the model ID (as set by the manufacturer).

|                   |
|-------------------|
| -Setup Device-    |
| Device Info Pg 2  |
| Product Cat: 0501 |
| Model ID: 0001    |

Page 3 shows the number of sub-devices implemented in the selected device (note that configuration of sub-devices is currently not supported), as well as the number of sensors.

|                  |
|------------------|
| -Setup Device-   |
| Device Info Pg 3 |
| Sub-devices: 0   |
| Sensors: 1       |

Page 4 shows the RDM version supported by the selected device and the current software version programmed in the device.

|                  |
|------------------|
| -Setup Device-   |
| Device Info Pg 4 |
| RDM Ver: 1.000   |
| SW Ver: 00020401 |

**Setup Device – Software Version Label (standard, required)**

The *Software Version Label* page displays a text description of the software version (instead of the hexadecimal version shown on subpage 4 of *Device Info*) currently programmed into the selected device.

|                  |
|------------------|
| -Setup Device-   |
| SW Version:      |
| 05/11/09 12:04:2 |
|                  |

If the software version label is longer than 16 characters, it will scroll across the screen.

The following sections outline the setup pages for the standard parameters that are not required but are supported by the ADDICT®. Also, only pages for parameters that are reported to be supported by the selected device will be available. The order of the pages will also be the same as the order that the device reports them to be supported, and this may differ between devices.

**Setup Device – Control Field (standard, required)**

The *Control Field* page displays flags about specific properties of the device being queried. The information is displayed over 2 pages with the up and down arrows used to scroll between the information.

|                |
|----------------|
| -Setup Device- |
| Control Field  |
| Man Proxy: YES |
| Sub-Device: No |

The 4 flags displayed are Managed Proxy, Sub-Device, Boot-Loader and Proxied Device with the setting of each flag represented as either Yes or No. The Managed Proxy Flag indicates if the responder is a Proxy device or not. The Sub-Device Flag indicates if the responder supports Sub-Devices.

|                 |
|-----------------|
| -Setup Device-  |
| Control Field   |
| Boot Loader: No |
| Proxied Dev: NO |

The Boot-Loader Flag indicates if the responder required a firmware upload before it can operate normally. The Proxied Device Flag indicates that the response has been transmitted by a Proxy on behalf of an actual device.

**Setup Device – Device Model Description (standard)**

The *Device Model Description* page displays a text description of the selected device's model (instead of the hexadecimal version shown on subpage 2 of *Device Info*).

|                |
|----------------|
| -Setup Device- |
| Model Desc:    |
| SLAMMO         |
|                |

If the device model description is longer than 16 characters, it will scroll across the screen.

### ***Setup Device – Manufacturer Label (standard)***

The *Manufacturer Label* page displays a text description of the selected device's manufacturer.

|                   |
|-------------------|
| -Setup Device-    |
| Manufacturer:     |
| Creative lighting |
|                   |

If the manufacturer label is longer than 16 characters, it will scroll across the screen.

### ***Setup Device – Device Label (standard)***

The *Device Label* page displays the selected device's current programmable device label and allows for this label to be changed.

|                 |
|-----------------|
| -Setup Device-  |
| Device Label:   |
| White LEDs Only |
| (ENTER to edit) |

If the device label is currently longer than 16 characters, it will scroll across the screen. Pressing enter will proceed to the editing page for the device label.

|                  |
|------------------|
| -Setup Device-   |
| Device Label: 15 |
| White LEDs Only  |
| [↑----->         |

The device label editing page allows you to change the device label currently set in the device. The current length of the label is shown on the 2nd line (minimum length is 0, maximum length is 32). Up to 14 characters of the label at a time are shown on the 3rd line, and the last line indicates which character is currently being changed (shown by the up arrow). The square brackets [ and ] indicate the ends of the label, and < and > indicate that there is more label past the ends of the extent of the label currently being shown.

Pressing increase and decrease will scroll the currently selected character through all the possible characters. There is one special character, the end of label character, and it is displayed as a filled in rectangle. If this character is selected, then the character before it is the last character in the label when it is stored into the device.

Pressing up and down will move the arrow left and right along the label, selecting the character that can be changed. Moving past the ends will cause the display to scroll appropriately.

Pressing enter will store the new label into the selected device. After storing, the label will be retrieved from the device to confirm that it has changed. Pressing escape returns to the view-only page for the *Device Label*.

### ***Setup Device – Factory Defaults (standard)***

The *Factory Defaults* page can be used to reset the selected device's current settings back to their default values.

|                 |    |
|-----------------|----|
| -Setup Device-  |    |
|                 |    |
| Restore Factory |    |
| Defaults?       | NO |

Press the increase or decrease button to select yes or no. Press the enter button to confirm the selection. Note that it is up to the manufacturer of the device to decide upon which settings are restored to their default values.

### ***Setup Device – Boot Software Version ID (standard)***

The *Boot Software Version ID* page displays the current version of the boot software programmed in the selected device. The format of the 32-bit value is chosen by the manufacturer.

|                   |  |
|-------------------|--|
| -Setup Device-    |  |
|                   |  |
| Boot Software     |  |
| Ver. ID: 00010000 |  |

### ***Setup Device – DMX Personality (standard)***

The *DMX Personality* page allows for the DMX Personality of the selected device to be changed. A DMX personality defines the functionality for each channel in the device's DMX footprint (i.e. how many channels it listens to). Different personalities may have different sized footprints. The *DMX Personality* page shows which personality is currently selected, how many channels are in its DMX footprint and a description of the personality.

The following example shows a DMX personality for a Control Freak® SLAMMO® 3-channel dimmer. Per the description, the personality uses 8-bit dimming, so there are only 3 channels in the footprint (one for each output channel).

|                    |  |
|--------------------|--|
| -Setup Device-     |  |
| DMX Personality: 1 |  |
| Footprint: 3       |  |
| 8-bit Dimming      |  |

Press the increase and decrease buttons to scroll through the available personalities for the selected device. Press enter to store the selected personality as the current personality for the device.

#### ***Setup Device – Reset Device (standard)***

The *Reset Device* page allows for the selected device to be reset remotely. There are two types of reset available, a warm reset and a cold reset. Typically, a cold reset is the equivalent of removing and reapplying power to the device, but the actual functionality of both reset options depend on the manufacturer.

|                |
|----------------|
| -Setup Device- |
|                |
| Reset Device   |
| NO RESET       |

Press the increase and decrease buttons to select the type of reset to perform. Press enter to send the selected reset command to the device.

#### ***Setup Device – Proxied Device Count (standard)***

The *Proxied Device Count* page displays the Device Count and List Change flag. The Device Count represents the number of devices being handled by the Proxy. The List Change flag is set if the devices represented by the Proxy have changed since last checking the Proxy Device list.

|                   |
|-------------------|
| -Setup Device-    |
|                   |
| Device Count : 10 |
| List Change: No   |

#### ***Setup Device – Proxied Devices (standard)***

The *Proxied Devices* page displays a list of the UIDs of devices represented by the selected Proxy. The UIDs can be scrolled through using the increase and decrease buttons. If the Proxy has more than 38 UIDs to transmit, multiple packets will need to be used to receive all the UIDs.

|                  |
|------------------|
| -Setup Device-   |
| ProxyDev Packet1 |
| 000102030405     |
| 060708091011     |

Pressing enter will request additional packets from the Proxy. When viewing the final packet, if an additional packet is requested the first packet will be redisplayed. The packet being viewed is displayed on the 2<sup>nd</sup> line.

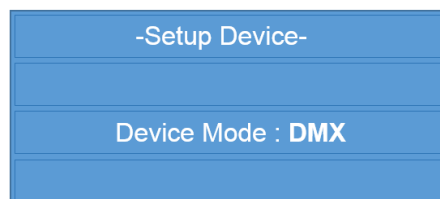
#### ***Setup Device - Manufacturer-Specific Parameters (non-standard)***

As mentioned earlier, as well as the standard RDM parameters, a device may also implement manufacturer-specific parameters. As the ADDICT® cannot possibly implement special functionality for all the manufacturer-specific parameters for all device manufacturers, it relies

on each individual device to report the available parameters and their data formats (as specified by the RDM standard). Note that a device is not required to report all its implemented manufacturer-specific parameters, and so these unreported parameters cannot be configured using the ADDICT®. Also, devices only provide information on how much data to use for a parameter and don't specify what the data means, so it may also be necessary to have a datasheet from the manufacturer when using these parameters.

### ***Setup Device – SLAMMO Specific (Creative Lighting specific parameter)***

Some Creative Lighting Control Freak® devices are capable of being controlled by more than one interface (e.g. DMX, DALI or DSI) and the *Device Mode* page allows for the current operating mode to be selected using RDM. Note that the device mode selected by RDM may still be overridden by dipswitches on the device itself (if fitted). The current device mode is displayed when the page is selected (if the device mode is being overridden by dipswitches, then the switch selected mode will be displayed)



Press the increase and decrease buttons to select the device mode. Press enter to set the selected device's mode. After being set, the device mode will be retrieved again for confirmation. If the device mode is being overridden, then the overriding mode will again be displayed, but the internal RDM device mode will be whatever was just set (and will be the operating mode if the override is removed).

Similar commands exist to change the following properties;

- Output Inversion
- Channel mode (1, 2, 3, or 4) Outputs
- Log or Linear Dimming

## ADDICT Menu Tree

(Items in **bold** are menus, all others are function screens)

### DALI

#### Installation

All Min/Max

#### **Random Address**

Address New

Address All

#### **Physical Selection**

Address New

Address All

Remapping

Assign Groups

Set Address

#### **Configuration**

Settings

Type Settings

Groups

#### **Scenes**

Set Scenes

Copy Scenes

Swap Scenes

#### **DALI Types**

Summary

#### **Diagnostics**

Test Commands

#### **Chasing**

Address Quick

Group Quick

Address Advanced

Group Advanced

#### **Sniffing**

Start Sniffing

#### **Recall Data**

Recall Last

Recall Alpha

Recall Beta

Send All to PC

#### **Store Data**

Last to Alpha

Last to Beta

Sniff to PC

Count Devices

Check Failures

#### **Advanced Tools**

SCI Mode

#### **Capturing**

Capture All

Capture 1 by 1

View Stored

Transmit to PC

Delete Stored

#### **Programming**

Program All

Program 1 by 1

View Stored

Receive from PC

#### **DMX512**

Test Channels

All Channels

Chase Channels

Sniff Channels

#### **RDM**

Identify All

Count Devices

Setup Devices

About

#### **Options**

Live Preview

Auto-Scan

SCI TX Mode

Wi-Fi Mode

## Optional Extras

Optional extras for the ADDICT® at time of publication include:

| Type                                                                              | Model                                   | Description                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cases                                                                             | ADD-CARRYCASE                           | Aluminium lockable case with protective inserts and handy pockets. Colour standard is black and silver however this may change – check when ordering. Dimensions 33 x 26 x 10cm                                                           |
|  | ADD-TrolleyBackPack<br>(see photo left) | Trolley backpack with Control Freak® logo and DALI Systems Integrator emblem. Especially useful for portable 12V power supply and with wireless ADDICT® modems                                                                            |
| Wireless                                                                          | ADD-PP-WIRELESS LINK                    | 2 x send/rx wireless modems with up to 900m indoor and 22km outdoor range – makes commissioning safer (no trailing cables) and faster (no need to have someone else looking for DALI devices during remapping).                           |
|                                                                                   | ADD-PP-Battery 12V for WIRELES          | 12V Battery 7Ah rechargeable – especially useful for portable power to the ADDICT                                                                                                                                                         |
|                                                                                   | ADD-PP-Battery charger for 12V          | 12V 300mA Battery charger for ADD-PP-Battery 12V for WIRELESS                                                                                                                                                                             |
| RS232                                                                             | ADD-PP-RJDB9Lead                        | RJ45 to 9-pin serial lead for ADDICT PC communications                                                                                                                                                                                    |
|                                                                                   | ADD-PP-Serial lead 9 pin                | 9-pin serial lead for wireless modem to DIDIO SCI                                                                                                                                                                                         |
| Parts                                                                             | ADD-PP-Box                              | SMD box to house lead set spare connectors                                                                                                                                                                                                |
|                                                                                   | ADD-PP-Battery 9v Ultra Durace          | Duracell Ultra 9V D battery for the ADDICT®                                                                                                                                                                                               |
|                                                                                   | ADD-PP-3 way quick connectors           | 3 terminal 400V 32A snap connector ideal for quick DALI connections to fly leads                                                                                                                                                          |
|                                                                                   | ADD-PP-5 way quick connectors           | 5 terminal 400V 32A snap connector ideal for quick DALI connections to fly leads                                                                                                                                                          |
| DMX-512                                                                           | ADD-PP-DMX-Y3                           | DMX512 in & through - rj patch to 1 male 3 pin xlr, 1 female 3 pin xlr                                                                                                                                                                    |
|                                                                                   | ADD-PP-DMX-Y5                           | DMX512 in & through - rj patch to 1 male 5 pin xlr, 1 female 5 pin xlr                                                                                                                                                                    |
| DALI SCI & PS                                                                     | DIDIO 7017                              | DALI PS & SCI & 12SCN (Power Supply module is removable), Serial Communications Interface (suits ADDICT, Clipsal DALI Control. Epygi Labs DALI Control and others) 12 trigger inputs mapped to scenes 0-11 - many other version available |



The ADDICT® with optional case (lockable aluminium), optional DMX lead and included SMPS power adaptor, RS232 patch lead, 9V battery, universal lead set and PC Comms lead (dongle and cat 5 lead now superseded by an RJ45 to 9-pin serial lead).



DALI Systems Integrator backpack, shown with optional radio modems in the side pockets. Backpack has a retractable handle and wheels for trolley use.



Optional Wireless Xstream Radio modems (configured by Creative Lighting to suit the ADDICT® and Creative Lighting's DIDIO SCI )



Optional DIDIO® – a convenient din mount combination of integral modules of DALI power supply 22Vdc 245mA, SCI Serial Communications Interface, and DALI Scene Controller with up to 12 i/o lines for switches and sensors eg manual DALI line emergency override, momentary push buttons, dry contacts from sensors. Up to 4 of the 12 i/o lines can be opto-isolated outputs eg as 24vdc outputs to drive 24v coils of contactors

## **FCC Statement**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## **SAR Information Statement**

Your ADDICT is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radiofrequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health. The exposure standard for ADDICT employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. \* Tests for SAR are conducted with the ADDICT transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the ADDICT while operating can be well below the maximum value. This is because the ADDICT is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output. Before a ADDICT model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this ADDICT when worn on the body, as described in this user guide, is 0.11 W/Kg (Body-worn measurements differ among ADDICT models, depending upon available accessories and FCC requirements). While there may be differences between the SAR levels of various ADDICT and at various positions, they all meet the government requirement for safe exposure. The FCC has granted an Equipment Authorization for this ADDICT with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this ADDICT is on file with the FCC and can be found under the Display Grant section of <http://www.fcc.gov/oet/fccid> after searching on

FCC ID: 2A9AO-ADDICT Additional information on Specific Absorption Rates (SAR) can be found on the Cellular Telecommunications Industry Association (CTIA) web-site at <http://www.wow-com.com>. \* In the United States and Canada, the SAR limit for ADDICT used by the public is 1.6 watts/kg (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements.

The SAR test distance is 0mm.