



LightBox *Express* - System Overview

LightBox *Express* - Introduction

The MultiControls **LightBox *Express*** system is a flexible, mid-range lighting control system. Designed to provide an easy to configure and simple to use lighting control system. The system is primarily focused on applications such as Offices, Schools, Universities, Hospitals and Airports etc. but can be applied anywhere that requires DALI lighting control. Featuring an intuitive touch screen user interface and commissioning tool, coupled with a sophisticated database engine, the system provides an intuitive and simple way to initially set-up and commission a system, as well as presentation of live real time status.

A wide range of sensors, switch input interfaces and multi button scene button panel options are available that ensure market leading functionality and flexibility, whilst being one of the most cost effective DALI control solutions in this sector.

LightBox *Express* - System Architecture

A **LightBox *Express*** lighting control system comprises of one or more MultiControls DALI Hubs.

Each DALI Hub has two completely independent DALI field networks. Each of the two DALI networks are full DALI, in that they support up to 64 DALI devices, 16 control groups and 250mA DALI current each.

The **LightBox *Express*** software is an application programme (App) that is installed on an Apple iPad touch screen tablet. The app is used to initially identify and configure connected DALI device into local control groups. However, as **LightBox *Express*** is a simplified and lower cost version of the full MultiControls LightBox product, each DALI field network is treated as a self-contained and separate DALI domain. Load and input devices must exist physically on the same DALI field network to function as part of a control group. It is not possible for example, for a sensor or switch on one DALI network to be grouped with lights on a different DALI network.

To simplify the installation of the lighting control system, **LightBox *Express*** is fully compatible with most pluggable 6 Pole mains power and DALI distribution marshalling boxes in the market.

MultiControls can provide suitable distribution boxes with up to 10 ways, together with pre-made plugs and leads if required.



MultiControls LightBox DALI Hub



The DALI Hub is the first of a series of Hub units to be developed by MultiControls. The DALI Hub has been designed to work “out of the box” as a stand-alone 2 Channel DALI processor.

The DALI Hub supports two independent DALI networks, each capable of supporting the full 64 devices, and up to 16 groups and 16 scenes as specified by the DALI standard. The DALI Hub is capable of controlling and monitoring all

DALI standard load devices. This includes fluorescent ballasts, LED drivers and relays. The system will work correctly with any lighting load controller that fully complies with the DALI standard. The DALI Hub also features an Auto-Heal facility enabling the replacement of a single failed DALI device automatically, without the need for any reprogramming.

It is possible to link multiple DALI Hubs together using Ethernet cabling and switches. This allows for ease of communication with multiple DALI Hubs from a central location, and also for a connection point for the Wireless Access Point(s) required to provide a communications link to the system from the iPad user interface device.

Unlike the full LightBox solution which uses a MultiController to process the control functions and holds the master data base, the **LightBox Express** application treats each of the DALI networks separately as a stand-alone DALI network. It is **not** possible to control devices on other DALI networks on the system using **LightBox Express**.

However, as the DALI Hub is actually the same device as used in the full LightBox control solution, it is possible to retro-fit a MultiController to an existing **LightBox Express** system, which then simply upgrades the whole system to LightBox. It should be noted that as **LightBox Express** uses the simple DALI 16 Groups and 16 Scenes of standard DALI, if the system were to be upgraded after the project has been commissioned, although the hardware remains the same, because of the enhanced functionality and database management of the full LightBox system, it would be necessary to re-commission the system using the PC based LightBox graphical interface.



MultiControls System Input Devices

MultiSensors



The **LightBox *Express*** system supports a wide range of extended DALI input devices for user control. MultiControls have developed a range of Passive Infra-Red (PIR) sensors for detecting occupation. Based on a common compact and bespoke plastic housing, MultiSensors are available in standard, slight motion, spot motion and 12m High Bay formats, each of which also includes a light level sensor and an infra-red receiver for use with an (optional) user

remote control unit.

Due to their compact size (only a 40mm diameter mounting hole required) the MultiSensor range is easy to install into most ceilings and lay-in tiles, using a standard sized (40mm) hole saw. They can also be incorporated into light fittings and metal ceilings using the standard spring arrangement. However, an optional backing ring or “Herbie” clamps are available to facilitate fitting if the material thickness is not sufficient for the standard spring arrangement to work properly. This avoids the need for backing boards and packer plates etc.

The design of the plastic sensor housing has also been made such that it can be mounted in a standard GU10 type downlight enclosure. This provides a further range of mounting options and bezel finishes. This is particularly useful in retro-fit upgrade installations where larger sensor heads can be replaced without the need for replacing ceiling tiles where larger sensors have been removed.

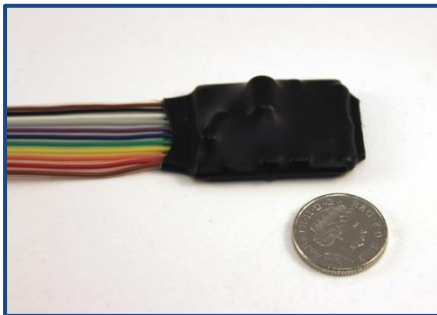
MultiControls also offer a range of surface mount options to suit applications where there is no ceiling void such as stairwells, or industrial type applications.



MultiControls

Switch Input Interfaces

In addition to the sensor range, the **LightBox Express** system also offers universal input units in both ribbon cable and Din Rail mount formats. Each of the input units supports up to 8 separate inputs, enough to cater for a full four gang switch plate of two way centre off retractive switches. Unlike many of our competitors, each input on the MultiControls ribbon cable input unit can be extended by up to 10m. This is achieved by a combination of comprehensive hardware and software noise filtering and switch de-bounce circuitry. This approach allows for multiple switch drops to be linked back to a single module using small cross section control or data cables, and allows for the input unit to be mounted in the most advantageous location.



The input units are referred to as “universal” because they are more than simple switch interfaces. Each of the 8 inputs on a device may be assigned to be either a latching switch, a momentary contact, a 3rd Party Sensor with integral timeout, or a 3rd party sensor using system timeout. This enables the LightBox system to use a wide range of switches and 3rd party sensors to ensure the widest possible flexibility when designing a system for your application.

The input module is also available as a DIN rail mounted option suitable for location in a control panel. This unit can be used with switch lines up to a maximum of 50m long.

Scene Button Panels



Multi Button Scene selection panels are also available that allow the pre-configuration of different scene levels. These scene levels can then be recalled by a simple single button press. Typically, a standard scene plate would have 4 Pre-set Scenes, Master Raise and Lower buttons and Off. Other button combinations and custom graphics are also available.

The MultiControls button modules are designed to use Euro Module wall panels. This means that a wide range of panel bezel finishes are available to complement other switch and power outlet hardware accessories in the space. Contact MultiControls for advice on available finishes.



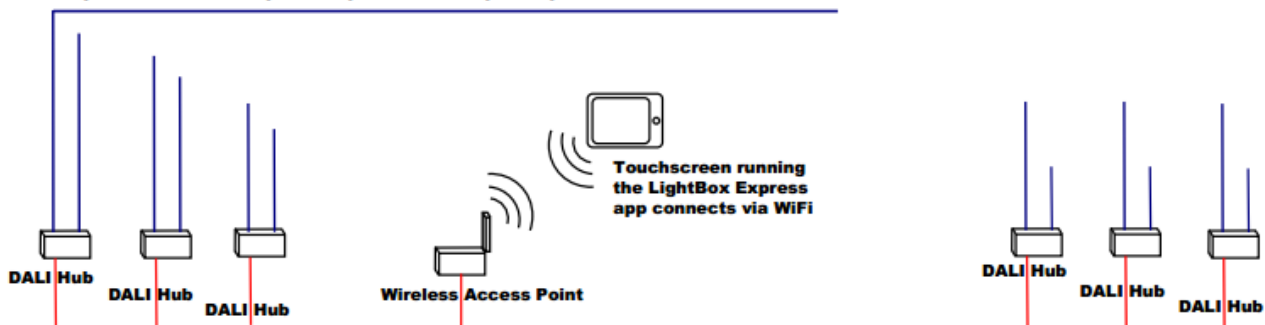
LightBox *Express* System Topology

Whilst the MultiControls **LightBox *Express*** system works as stand-alone DALI networks, the Hubs can be connected together using global standard Ethernet TCP/IP network connections. Although the DALI networks are separate and not connected together from a control perspective, connecting the hubs together via Ethernet does bring the advantage that hubs can all share Wireless Access Points allowing a connected iPad to communicate with any local Hub on the network. This can either be via a fully private network, or the system can be incorporated in to an existing building I.T. infrastructure with an appropriate range of I.P. addresses being provided by the I.T. department.

In the development of **LightBox *Express***, we have focussed our protocols on the use of Ethernet for data transfer, this ensures that LightBox is able to take full advantage of industry standard network technologies such as data switches and the WiFi wireless networking that is required for communication with the system from the iPad. We have also ensured that all of our devices use fully compliant full range network addressing, and do not impose restrictions on the network (this is a significant limiting factor with some other systems). In fact, very few systems are available that allow multiple Standard DALI networks to be linked to a common communication backbone.

The flexibility and worldwide standard of Ethernet means that the full range of networking tools and equipment may be used to create a network that is as simple or complex as required for the particular specifications of a project. A small simple installation might consist of a single DALI Hub connected directly to a Wireless Access point. Larger applications might use a private network using unmanaged network switches linking multiple DALI Hubs together allowing access to individual DALI Hubs from Wireless Access Points anywhere on the Ethernet network.

DALI Network - Capable of supporting a complete 64 device subnet of DALI Devices in up to 16 Control Groups with up to 16 scenes per output.



TCP/IP Network (Optional)

A wireless access point is required to commission the LightBox Express DALI Hub from the iPad App. The DALI Hubs do not need to be networked to each other to operate correctly after they have been configured. However the Hubs are often networked to assist with modification and maintenance.



MultiControls Lighting Control Panels



At MultiControls we are well aware that providing an installer with a carton full of DALI Hubs and other electronic devices, can sometimes be a daunting and problematic prospect. This is also exacerbated by the fast track nature of modern construction programmes. We have found that offering a panel manufacturing service takes the worry of finding suitable enclosures to house the sensitive electronic components, connection of power supplies, and terminating DALI field networks. This is particularly true when it

comes to the Ethernet connections for devices such as MultiControllers, Hubs, Wireless Access Points and Network Switches.

To overcome these real life problems, MultiControls can manufacture lighting control panels which are designed specifically for the project. All internal assembly and wiring is completed and tested at our works. This approach means that for each control panel location, the correct equipment is pre-installed within the panel and internal wiring for power supplies etc. are all completed prior to shipping to site.

Once on site, all that is required is to mount the panel on the wall of the electrical riser / cupboard, connect the control panel mains power, outgoing DALI networks and Ethernet data cables.

All panel connections are brought to terminal rails at the top of the panel (bottom entry is available on request). This means that the installer does not need to worry about the interconnection of the individual components, or risk damaging them making up their own panels. The external wiring is simply connected at the panel terminal rail.

Unless specifically requested otherwise, MultiControls panels use high quality IP65 enclosures with hinged locking doors and removable gland plates as standard.

All internal wiring is over rated for the loads involved, and the ends of the cables are terminated with Bootlace ferrules.

Cable management is by loomed cable runs, or contained in finger trunking as appropriate.

Where multiple devices such as the MultiController and a number of Hubs are to be fitted in a panel, a network switch will be provided for the Ethernet Data connections. Alternatively, if the building IT infrastructure will be used to connect the lighting control system together, we offer an option of a patch panel.



LightBox *Express* User Interface (UI)

Traditionally, Users of lighting control systems have struggled with a lack of an intuitive user interface resulting in systems being difficult to visualise, harder to access and often requiring additional paper drawings and grouping tables to be maintained to keep the system up to date and allow changes to be made.

MultiControls have developed the **LightBox *Express*** UI – a user interface designed to provide clear and simple visualisation, commissioning and control of lighting systems.

Below are some typical screen shots showing the pages available via the iPad. Set-up and control of the system is carried out using the drag and drop functions familiar to iPad users.

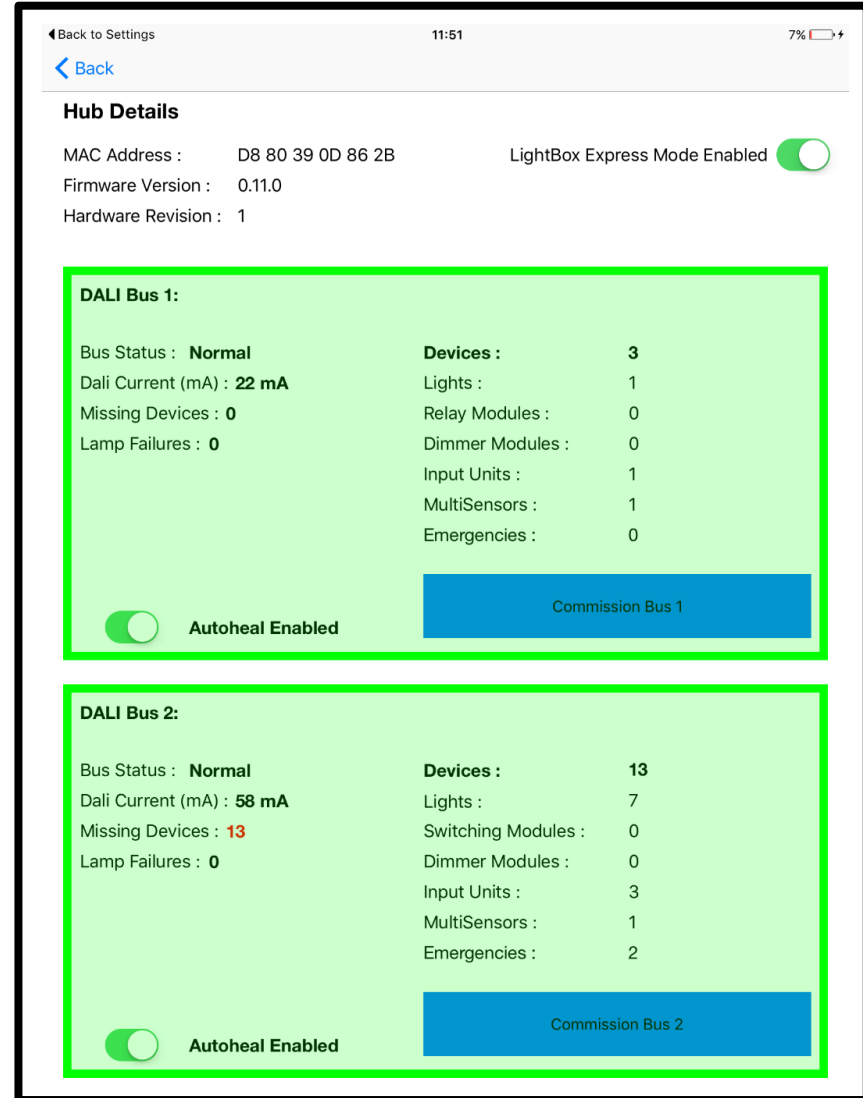
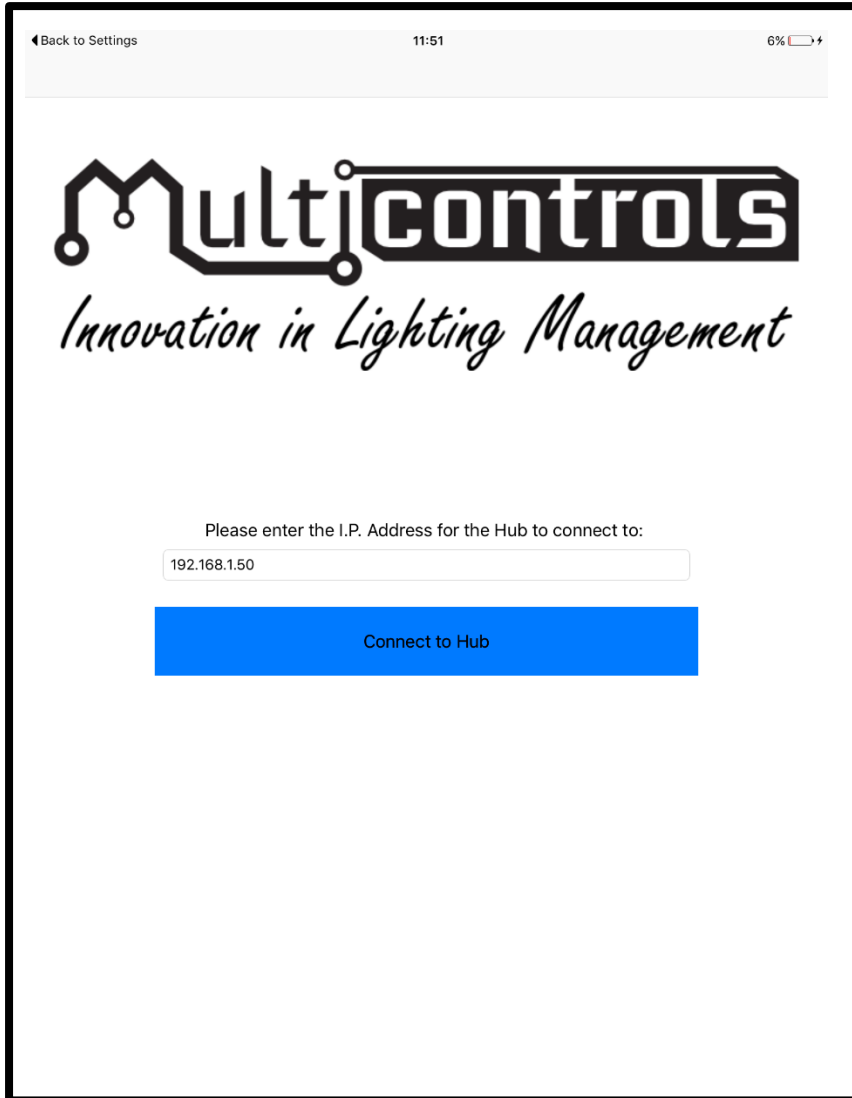
The interface has been designed to present the information in logical pages in a simple and clear way, enabling the system to be configured by anyone who has basic lighting controls knowledge.

The **LightBox *Express*** App is available from the Apple App Store to download free of charge.

Design and Application

MultiControls would be delighted to assist you with the application of **LightBox *Express*** to your project.

Please contact the MultiControls Team for further assistance.





← Back to Settings 11:52 7% 🔋

← Back

Bus 1 - Group 1

Group Sensor Settings

Sensor Occupied Mode : **Direct Level** Scene Disabled Presence Mode Absence Mode

Group Sensor Mode :

Occupied Level (0 - 100%) : 100% Transition Level (0 - 100%) : 20%

Occupied Scene (1-16) : 0 Absence Level (0-100%) : 0%

Controlled Luminance Enabled

Manage Device Settings

- Manage Outputs 1 Devices
- Manage Sensors 1 Devices
- Manage Inputs 1 Devices
- Scan for Switches

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DALI Bus 1

All Devices 3 Devices

Group 1 3 Devices	Group 2 0 Devices	Group 3 0 Devices	Group 4 0 Devices
Group 5 0 Devices	Group 6 0 Devices	Group 7 0 Devices	Group 8 0 Devices
Group 9 0 Devices	Group 10 0 Devices	Group 11 0 Devices	Group 12 0 Devices
Group 13 0 Devices	Group 14 0 Devices	Group 15 0 Devices	Group 16 0 Devices



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Bus 1 Group 1 Output 1 of 1 **Status - OK**

<<< Previous Output <<< >>> Next Output >>>

Start Identify Mode

Output Levels and Fade Rate / Time **Output Details**

Current Level : 100% Short Address : 1

Maximum Level : 100% Long Address : 57-115-228

Minimum Level : 1% Device Type : 0 - Fluorescent

Power Up Level : 100% Dali Current : 2mA

System Failure Level : 100% Physical Min : 1%

Edit Fade Rate / Time

Scene Levels

Scene 1 : 100%	Scene 5 : 10%	Scene 9 : 29%	Scene 13 : 40%
Scene 2 : 72%	Scene 6 : 10%	Scene 10 : 60%	Scene 14 : 10%
Scene 3 : 48%	Scene 7 : 90%	Scene 11 : 78%	Scene 15 : 100%
Scene 4 : 24%	Scene 8 : 49%	Scene 12 : 78%	Scene 16 : 100%

Remove From Group Edit Group Membership

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Bus 1 Group 1 Sensor 1 of 1 **Status - OK**

<<< Previous Sensor <<< >>> Next Sensor >>>

Start Identify Mode

Sensor Devices **Sensor Details**

Motion Sensor Enabled Short Address : 7

Solar Sensor Enabled Long Address : 244-140-94

Infra-Red Receiver Enabled Dali Current : 10mA

Device Type : MultiSensor

Sensor Timeouts

Timeout 1 : Hrs Mins Secs

Timeout 2 : Hrs Mins Secs

Solar Refresh : Hrs Mins Secs

Auto-Calibrate Light Sensor

Remove From Group Edit Group Membership

Multicontrols

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Scan for Switches

Scan time remaining: **22 Seconds Remaining**

Start 10 Sec Scan for Switches Start 30 Sec Scan for Switches Start 1 Min Scan for Switches

Stop Scan for Switches

- Bus 1, Address 6, input 1
- Bus 1, Address 6, input 3
- Bus 1, Address 6, input 3
- Bus 1, Address 6, input 5
- Bus 1, Address 6, input 5
- Bus 1, Address 6, input 7
- Bus 1, Address 6, input 0
- Bus 1, Address 6, input 2
- Bus 1, Address 6, input 2
- Bus 1, Address 6, input 6
- Bus 1, Address 6, input 6

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Bus 1, Group 1, I/P Unit 1 of 1 Status - OK

<<< Previous Input <<< >>> Next Input >>>

Input Details

Short Address : 6 Long Address : 63-68-80 Dali Current : 10mA

Input 1 :
Raise (L)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

NOT IN GROUP

Input 5 :
Dimming Switch (L)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 2 :
Recall Scene (S)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 6 :
Recall Scene (S)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 3 :
Lower (L)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 7 :
Level Recall (L)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 4 :
Recall Scene (S)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Input 8 :
Recall Scene (S)
Momentary

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Multicontrols

iPad 11:57 9%

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Bus 1, Group 1, I/P Unit 1 of 1, I/P 2 Status - OK

[<<< Previous Input <<<](#) [>>> Next Input >>>](#)

Input Type

Recall Scene (S)
Momentary

Input Details

Short Address : 6
Input Number : 1
Long Address : 63-68-80
Dali Current : 10mA
Device Type : Input Unit

Input Levels

On Signal

On Level/Scene Mode :

[Direct Level](#) [Scene](#)

On Scene (1-16) :

1

Controlled Luminance Enabled

[Remove From Group](#) [Edit Group Membership](#)

iPad 11:58 9%

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Latching Switch
On and Off
Level Commands

Latching Switch
On and Off Actions
Scene Commands

Dimming Switch
On, Off and Dimming
Level Commands

Dimming Switch
On, Off and Dimming
Scene Commands

Level Recall
On only
Level Commands

Scene Recall
On only
Level Commands

ON AND UP
On and Raise Level
Level Commands

ON AND UP
On and Raise Level
Scene Commands

OFF AND DOWN
Off and Lower Level
Level Commands

OFF AND DOWN
Off and Lower Level
Scene Commands

Raise
Raise Level Only

Lower
Lower Level Only