Helvar

# How to use Digidim Toolbox

*freedom in lighting*

# Welcome

# WELCOME TO ‘HOW TO USE DIGIDIM TOOLBOX’

Helvar is an international lighting technology company with over 90 years of history, specialising in energy-efficient solutions lighting control systems. Helvar systems make businesses more valuable by enhancing the experience and well-being of people spending time in their property.

This small training kit is for engineers, trainees and anyone wishing to program a simple lighting scheme – in schools and offices, in art galleries, health care centres and shopping malls. All you need is a little technical know-how and to follow these steps in order to set up Digidim Toolbox. You should be familiar with the basics of DALI, DALI addressing, groups and scenes in order to be able to follow this guide.

**If you need advice or technical support, please contact your Helvar trainer or contact your local Helvar representative.**

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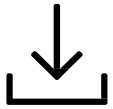
## WHAT YOU WILL LEARN





What Digidim Toolbox is

How to set up Digidim Toolbox hardware

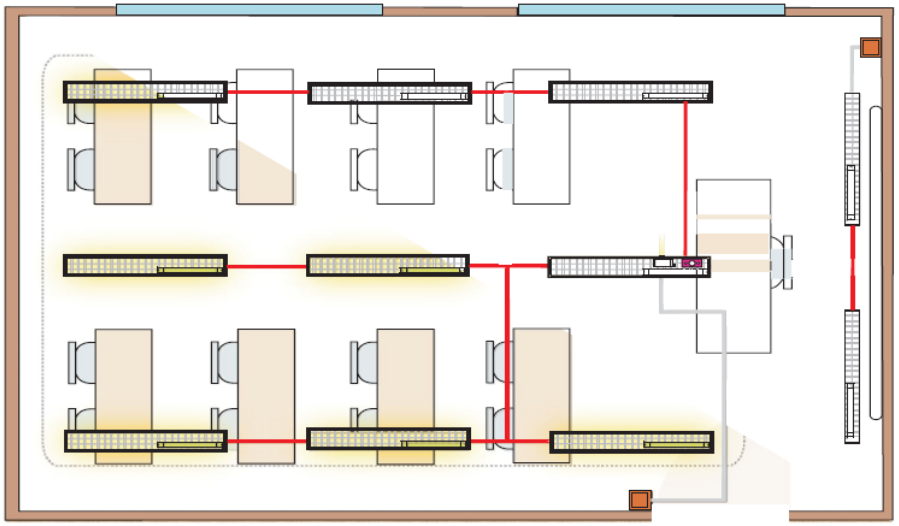
How to install Digidim Toolbox software

How to use Digidim Toolbox interface

How to program a simple lighting system

# WARM-UP EXERCISE:
# EXPLORING THE LIGHTING SET-UP IN A SMALL CLASSROOM

**Take a look at this meeting room set-up and consider:**



1. How will the **room be used**? This helps to decide what type of lighting controls should be provided.
2. **What lights** are in the room?
3. What are the different lights **used for**?
   Do they need to be dimmable or just switched on and off?
4. What different **levels of lighting** are needed in the room for different situations and tasks?
5. Is the control **automatic or manual**?

# ANSWERS

## **WHAT LIGHTS** ARE IN THE ROOM?

The lighting in the room includes:

- ceiling lights
- a long pendant lamp above the table
- three spotlights above the whiteboard

## WHAT ARE THE DIFFERENT LIGHTS **USED FOR**?

- ceiling lights: general lighting for when people in the room
- long pendant lamp above the table: light for people to read, make notes, discuss, work at the table
- three spotlights above the whiteboard and screen: light for the whiteboard

# WHAT DIFFERENT **LEVELS OF LIGHTING** ARE NEEDED IN THE ROOM FOR DIFFERENT SITUATIONS AND TASKS?

Let's consider this in detail. In terms of the level (brightness) of the lamps in the room, what is required of the lighting for these situations?

- Normal meeting: six people sitting at the table, discussing an issue
- Presentation/video: one person presents, with the aid of a monitor or screen, while five or six people comprise the audience.
- Room cleaning: in the early evening, the cleaner, among other things, hoovers the floor, and wipes the furniture and whiteboard/ monitor
- Security check: late at night, the security guard checks to see if anyone is in the room

Are the same levels of lighting needed for each of these situations?

What differences are there?

# IS THE CONTROL **AUTOMATIC OR MANUAL**?

**It's important to think about how the lighting should be used and how it will be used, in order to decide what type of lighting controls will be provided.**

**A Digidim standalone lighting control system can allow for:**

- Manual control (using buttons, sliders, rotary controls or smartphone apps)
- Automatic control (using occupancy sensors that control the lights depending on whether someone is in the room or not)
- 924 Touch Screen schedules
- Time clocks connected via input units
- AV interfaces to third party systems

**To decide which would be best in this situation, consider these questions:**

- When the first person walks into the meeting room, should the lights be activated manually or automatically?
- When someone leaves the room, it's important to make sure the lights are turned off. Should this be done manually or automatically?
- In the evening, after the company staff have gone home, the cleaning team do their work. What is the best way for them to turn the lights on and off: manually or automatically?

# GLOSSARY

| | |
|---|---|
| **Address** | a unique static number from 1 to 64 assigned to a device in a Digidim DALI network |
| **Ballast** | a device to regulate voltage and current to fluorescent lighting |
| **DALI** | a standardized (IEC 62386) protocol describing digital communication between lighting devices |
| **Digidim Toolbox** | the software that allows you to program Helvar's Digidim lighting systems |
| **Group** | a subset of devices from a lighting scheme that are operable by the control device(s) programmed to control that group |
| **LED driver** | a device to regulate voltage and current to LEDs |

# WHAT IS DIGIDIM TOOLBOX?

Digidim Toolbox is a piece of software that lets you program a small standalone lighting control system. The lighting control system contains these components:

- Loads: e.g. DALI LED drivers and DALI ballasts
- Controls: Helvar's Digidim controls (eg button panels, sliders, rotary controls, sensors, and input units)
- DALI Power Supply Unit (PSU)
- Interface to program the system

Running Toolbox on your PC, you connect to the lighting control system, program the system and then disconnect the PC. The lighting controls will work as you programmed them. If you need to alter the programming, you run Toolbox, reconnect, make changes and then disconnect. We will walk you through each step in this guide.

These are some simple examples of what you can program with Toolbox:

- Make a button switch on a certain group of lights
- Set all the lights in a room to specific, individual levels, and save these as a preset scene
- Make a button or sensor recall preset scenes
- Make a sensor turn the lights on/off or up/down depending on whether a room is occupied or not

The maximum size of the system is 64 DALI addresses. In reality this is likely to be a maximum of 50 LED drivers, fluorescent ballasts, or other load interfaces with a few sensors and some button panels.

# 2

# Overview of the Digidim system and Toolbox

# DIGIDIM TOOLBOX

## What can you control?

The Digidim system is based upon the standardized DALI communications protocol, which describes communication between lighting devices and enables them to be addresse individually. A Digidim standalone system can have up to 64 addressable devices.

Digidim components have additional functions, specific to Helvar.

A Digidim system lets you program and control devices on a single DALI Digidim network. The equipment you have in this training kit is enough to create and program a very small lighting control system, with fewer than 10 Digidim devices to control two light sources.

The light sources are the LED drivers and LED modules. Each LED driver is connected to two LED modules: each of these is one lighting load.

The button panels and the sensors can send messages to control the light sources. If the devices are connected via cable to the Digidim DALI network, they can communicate.

You can group components and control their functions via the Digidim Toolbox interface to create a basic lighting system that works for you and your environment.

# PRODUCTS USED IN THE DIGIDIM SYSTEM

LED Driver

452 Universal
1000 W Dimmer

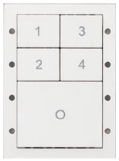
478 8-Subnet
DALI Controller

474 Ballast
Controller

111 Double
Slider Control

Illustris
Touch Panel

311 PIR Sensor
(311 Passive Infra
Red Sensor)



134 5-button
Control Panel

100 Rotary
Controller

**Load interfaces**

Devices to control all major lighting load types

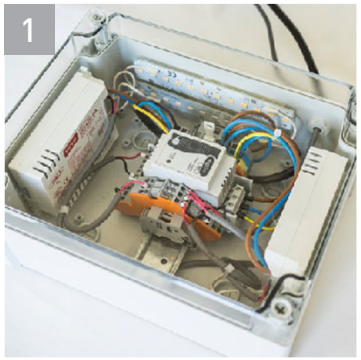
- DALI electronic ballasts
- DALI LED drivers
- Dimmer modules
- Relay units
- Control modules

**User interfaces**

- Button panels
- Sliders
- Rotary controls
- Sensors (PIR and microwave)
- Infrared controls
- Input units

**Power supply units (PSUs)**

# DIGIDIM TOOLBOX HARDWARE: CONTENTS



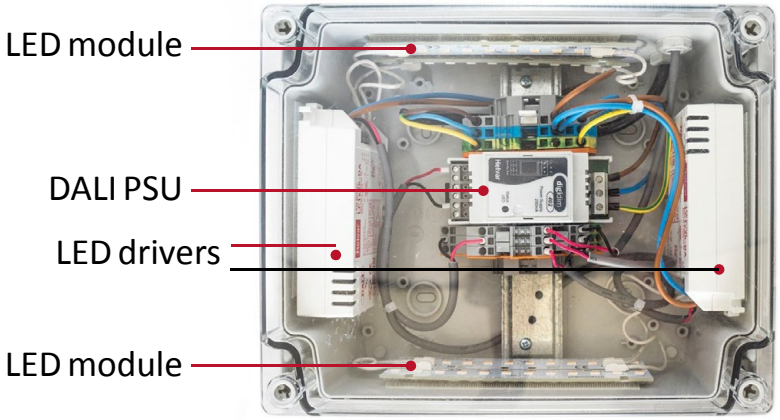





Before we get started in connecting up the Toolbox hardware, take a moment to check you have all of the following:

| | |
|---|---|
| 1 | Main box: plastic box with transparent lid |
| 2 | USB cable to connect your PC to the user interface box |
| 3 | User interface box ('control box') |
| 4 | Multisensor, mounted in back box (cylindrical ceiling mount) |
| 5 | Two WAGO connectors to connect equipment to the DALI network |

**If you are using your own training kit, or if anything is missing, please contact your Helvar trainer or Helvar local representative.**


# MAIN BOX: CONTENTS

**Within the main box you should see the following:**

- Two Helvar LED drivers
- Four Helvar LED modules
  (two each connected to the LED drivers)
- Helvar 402 DALI power supply unit

**Within the main box you should see the following:**

- Two Helvar LED drivers
- Four Helvar LED modules
  (two each connected to the LED drivers)
- Helvar 402 DALI power supply unit

**The main box has the following external cables:**

- One mains cable (black, with three-pin mains plug)
- One DALI cable: white sleeve, with two wires
  (DALI + and DALI-)



# USER INTERFACE BOX: CONTENTS

The user interface box is a standard UK electrical double back box, comprising the following:


One Helvar 131 two-button panel ('0' and '1')


One Helvar 510 USB interface (with mini-B USB connector socket)


One Helvar 135 seven-button panel

Back box

## USB CABLE

The five-metre USB cable will be used to connect the user interface unit to your PC.


## MULTISENSOR

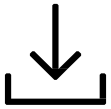
The Helvar Multisensor (product code 312), detects occupancy and light levels within the room.

The multisensor in this kit is mounted in a cylindrical box, used to mount the sensor on a hard ceiling.

# 3

# Setting up Digidim Toolbox

## IN THIS SECTION YOU WILL LEARN:

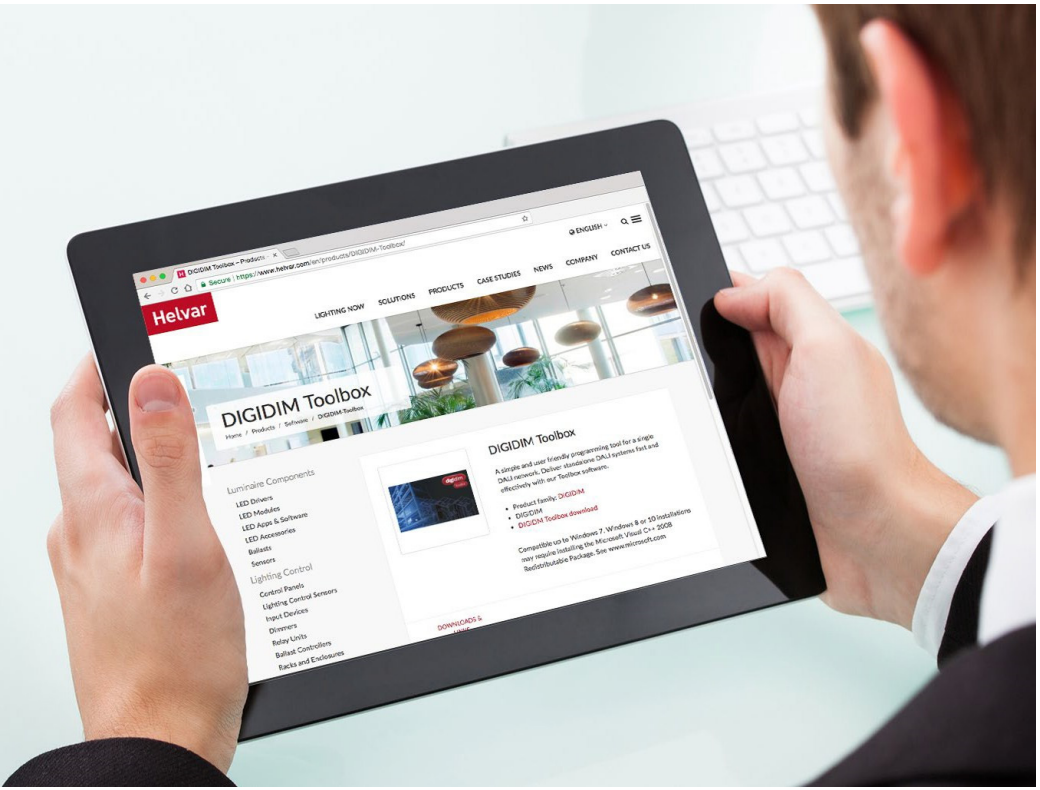


How to install the Toolbox software

How to connect the main box and user interface box

How to connect your PC to the Digidim system

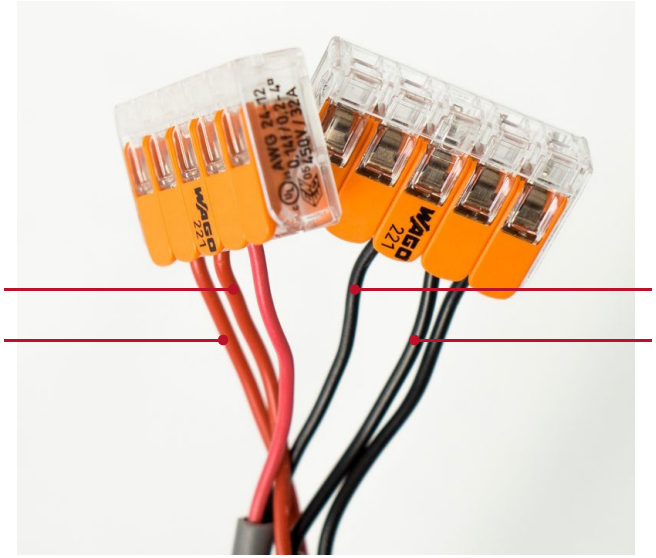
How to power on the main box




1 Download the Toolbox software from Helvar's website and follow the instructions to install it on your PC:

HTTPS://WWW.HELVAR.COM/EN/PRODUCTS/DIGIDIM-TOOLBOX/

Please note: the software is compatible with Windows PCs only



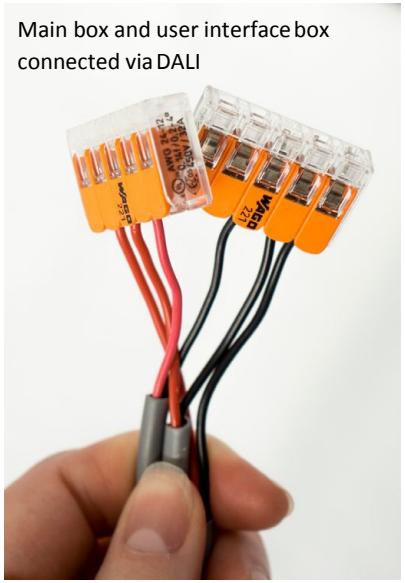

2 Make sure you have all your hardware components ready. **Connect the user interface box DALI cable to the main box DALI cable**, as in the image opposite.


3 Now **connect the user interface box to your PC** via the USB cable supplied.

Main box
mains cable

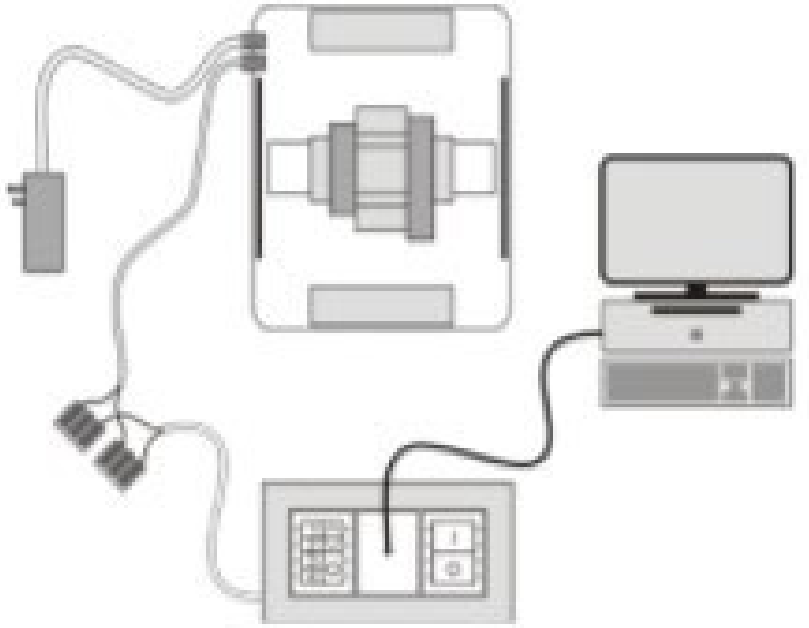

User interface box
connected via USB to
laptop

Main box and user interface box
connected via DALI



4 Finally, with the user interface box connected to the main box and to the PC, **plug the main box into the mains**. The user interface box should light up.

## Your set-up should look like this:



You're ready to start programming the system using Toolbox.

# 4

# Connecting to the network using Digidim Toolbox software

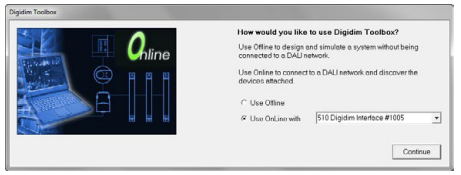
# IN THIS SECTION YOU WILL LEARN:

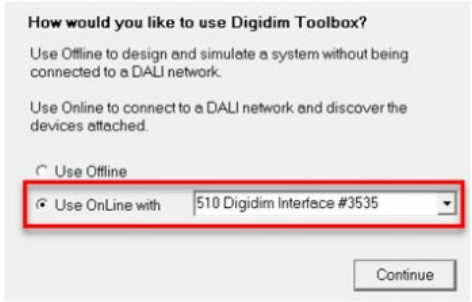
How to run the Toolbox software

How to connect your PC to the Digidim system

## 1 Run the Toolbox software from the shortcut on your PC.


## 2 Select ‘Use Online with: 510 Digidim Interface’, and click ‘Continue’.



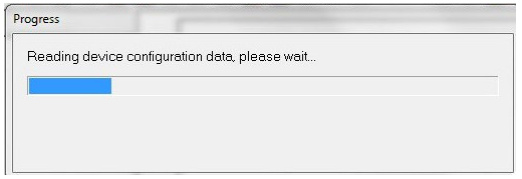

## 3 Wait for Toolbox to connect to the Digidim system.

Toolbox will communicate with the Digidim network to:

- Discover what Digidim and DALI devices are present
- Find out which properties they have
- Assign a DALI address to each Digidim device

This can take up to several minutes for larger systems.

When Toolbox has connected you will see the interface, which we will explain in the next section.

# 5

# Learning to use the Toolbox interface

# OVERVIEW OF DIGIDIM SYSTEM AND TOOLBOX SOFTWARE

## More details on what you can control

| | |
|---|---|
| **Addressing** | Each DALI Digidim device is assigned an address on the Digidim network. The network can have up to 64 addresses. These could be sensors, button panels, LED drivers, ballasts, dimmers or other load interfaces. |
| **Groups** | 16 groups can be configured. A load interface (eg LED driver, ballast or dimmer) can belong to more than one group. A control device (eg a button, rotary, slider, or touch panel or sensor) can belong to one group only. |
| **Scenes** | DALI-compliant load interfaces (eg LED drivers, ballasts, dimmers) can each store 16 scenes (preset levels) for different tasks or moods. |
| **Fade times** | When scenes are called by a control, a fade time of up to 90 seconds can be specified in DALI. Note: a DALI 2 system allows fade times of up to 16 minutes. |
| **Min/max** | For each DALI load (eg LED driver, ballast, dimmer) you can set a minimum or maximum output level (eg in case a lamp is too bright at maximum level, or if you need a minimum level of light in a corridor for safety reasons). |

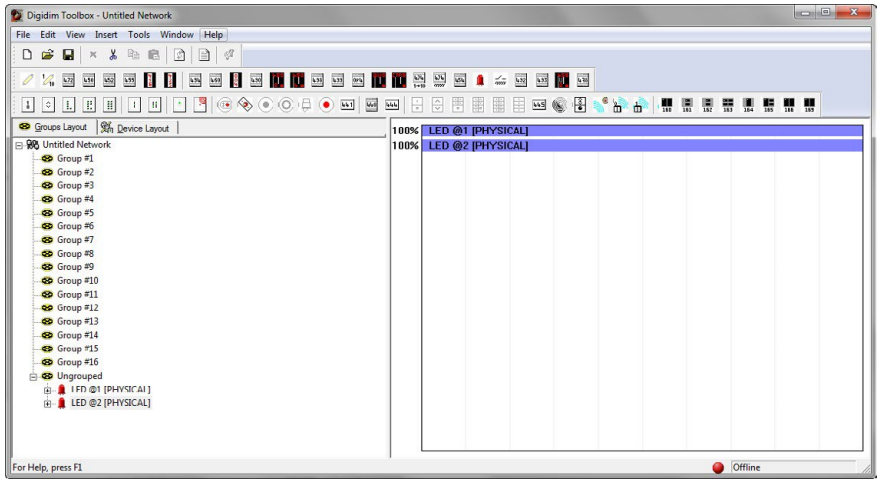
When you program the system using Toolbox, the settings are stored in the Digidim devices. When you disconnect your PC, the system works as programmed.

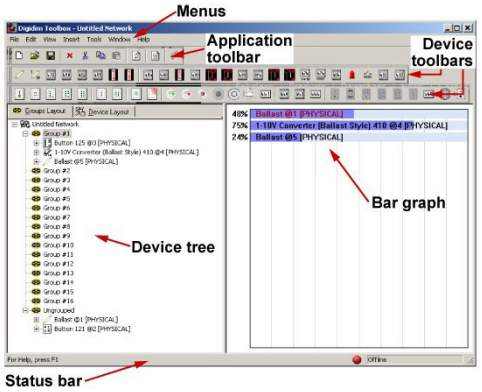
# TOOLBOX INTERFACE

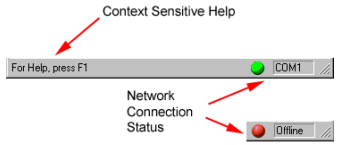
**Once you have connected to the network, you will see the Toolbox interface.**

- This consists of: Toolbar
- Device icons
- Device tree
  - Groups layout
  - Device layout
- Channels graph

**You will learn about each of these in the following pages.**



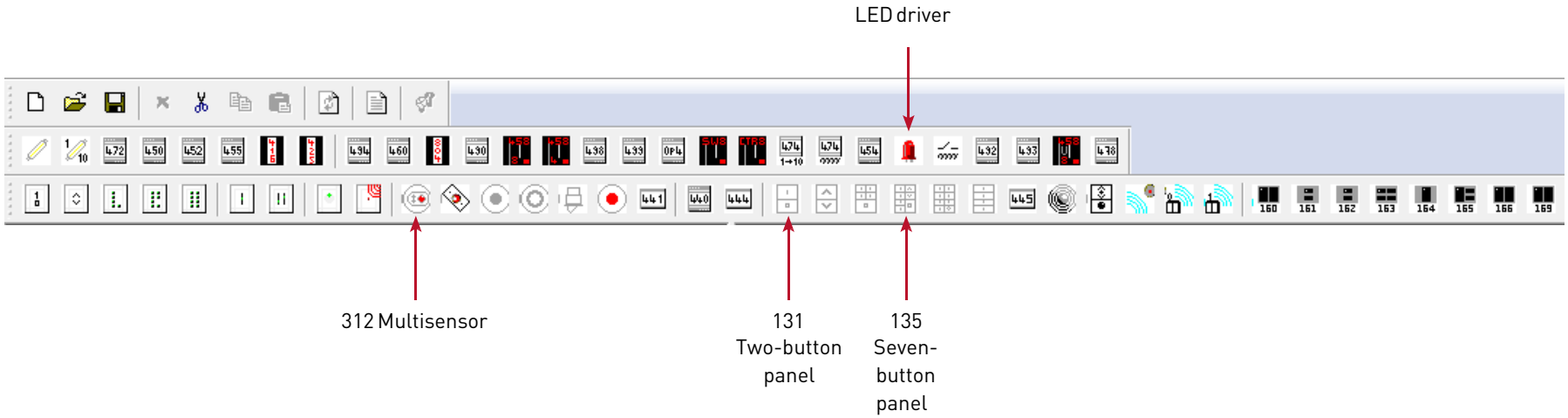



# TOOLBAR

The toolbar is used for adding virtual devices to a Digidim network, either for designing a system or for a commissioning engineer when programming a real system. The toolbar icons each represent a different piece of Helvar Digidim equipment. Add a virtual device to your Digidim network by clicking on one of the icons.

The toolbar has three sections (they can be dragged to make them more easily visible): one for files and editing, one for load interfaces and one for control devices.



# DEVICE TREE (1)

## Groups layout and device layout

The device tree shows you which devices are connected to the network via two different layouts:

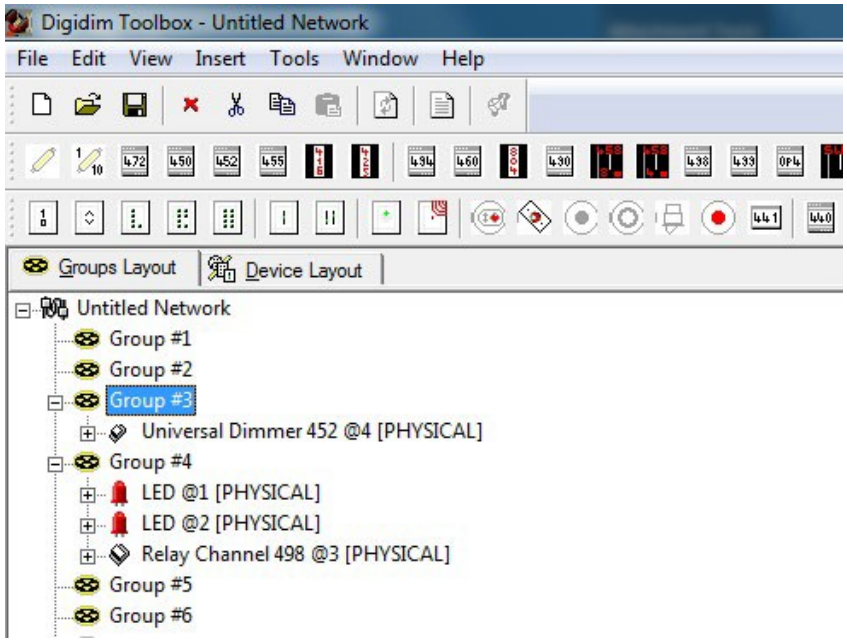
### Groups layout

This shows how devices are grouped together.
All programming is done in this view. We will show you how to create groups in the section ‘Programming: first steps’.

### Device layout

This shows all devices within the lighting scheme.
‘Virtual’ devices are removed here.

In both views load interfaces show ‘scene’ content (the levels of Scenes 1 to 15). Controls show sub-devices and functions



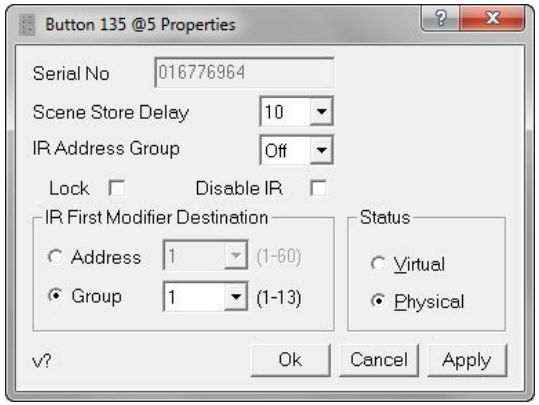
# DEVICE TREE (2)

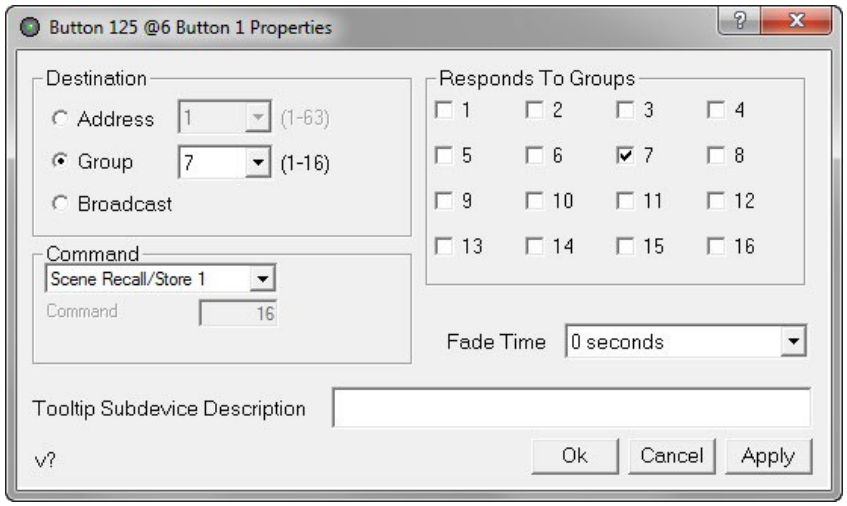
## Properties

The ‘Properties’ dialogue box is accessed by right clicking on a device. It shows device information such as:

- Serial number
- Function
- Fade times (for control devices)
- Group or groups
- Broadcast or ‘addressed’ command option
- IR enabled or disabled

The options available differ by device type.
We will show you how and why to change these properties in the next section.



# 6

# Introducing groups, addresses, channels and scenes

# GROUPS

- A DALI Group represents a subset of devices from a lighting scheme that are operable by the control device(s) in the Group. For example, if you want a sensor to control the lights in a reception area, in Toolbox, put the sensor and those lights in one group.
- A load interface (eg LED driver, ballast, dimmer) can be in many groups.

## Example

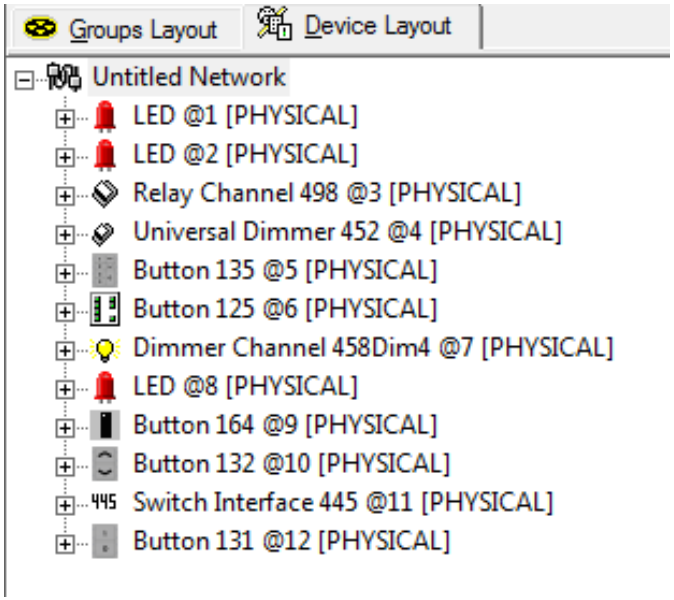
- A bar in a restaurant is lit by a row of incandescent (tungsten) lamps. These are connected to a Helvar 452 DALI Dimmer. The staff can control the bar lighting using a slider control, behind the bar. There is a 'last person out' button near the exit, so that when the restaurant closes, the manager presses that button, and all lights (including the bar lights) dim slowly down, then off. In Toolbox, the 'Bar Lights' 452 dimmer is placed in two groups: 'Bar' and 'Whole Restaurant'. The slider behind the bar sends messages to the 'Bar' Group, and the button by the exit sends messages to the 'Whole Restaurant' Group.

A control (eg a button, sensor, slider, rotary or touch panel) can be in one group only.

- Newly discovered devices are put in the 'Ungrouped' Group as they have not yet been programmed.
- To make, for example, a button control a ballast, put them in the same group.
- To put a device in a group:
  - Drag and drop Or
  - Right click and choose 'Properties' and click on 'Group' or 'Exists in groups'
- If a control is in 'Ungrouped', it broadcasts commands to all devices in the network.

# ADDRESSES

- The DALI address of each device is show in the device tree after @
- The DALI address is assigned at random, from 1 to 64




# ADDING DEVICES TO A DIGIDIM STANDALONE NETWORK

You may need to add devices to the Digidim lighting control system, and program them. If, for example, you add an extra button panel in a classroom, do the following:

1. Physically install the button panel and connect (wire) it to the Digidim DALI network.
2. Connect a PC to the DALI network and run Toolbox.
3. Select 'online' mode.
4. Toolbox will detect the existing devices, and the new device. You can now program the new button panel.

# CHANNELS

- Channel levels are shown on the right-hand side of the interface and correspond to the channels (‘circuit of lights’) on your connected devices. A multi-channel (eg four-channel) device in the network will be shown as four individual channels in the graph.

## Examples

- A shelf behind a hotel reception desk is backlit by a strip of LEDs, controlled by one DALI LED driver: in Digidim (and in Toolbox) this is one lighting channel.
- An open plan office has eight luminaires, each with four fluorescent tubes. Each luminaire has two DALI ballasts, each controlling two fluorescent tubes. In Digidim (and in Toolbox) this is 16 lighting channels.
- You can adjust channels using the channel graph in Toolbox, adjusting lights up or down by dragging the channel level.

# SCENES

- Each load interface (eg LED driver, ballast, dimmer) can store up to 16 scenes for different tasks and moods.
- A fade time is the time taken for the transition from one scene to another. When programming control commands, you can specify a fade time.

### Storing scenes

- You adjust lighting levels using the channel graph and then store that set of levels for later use – as a lighting scene. Then, when you want to set the lights to exactly those levels again, you 'recall a scene'.

## Example

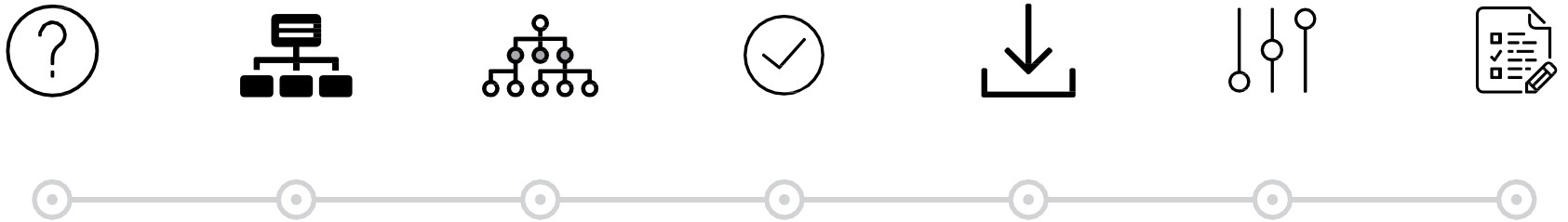
- In a hotel restaurant, a button panel might have four buttons each programmed to recall the correct scene for 'Breakfast', 'Lunch', 'Dinner' and 'Nighttime'.

We'll go through an example of how to store scenes and specify fade times in the next section.

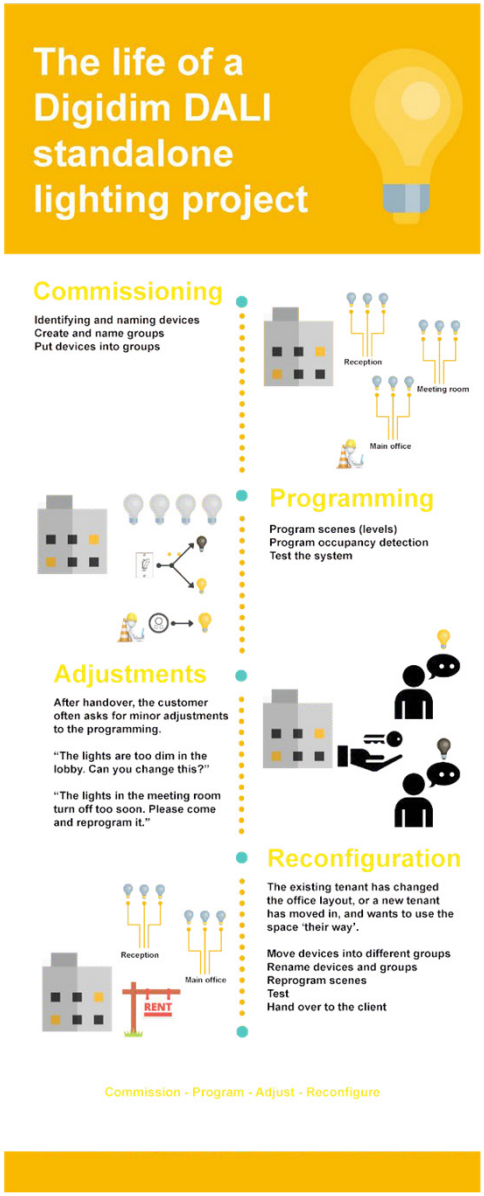
# 7

# Programming: first steps

# IN THIS SECTION YOU WILL LEARN:



- How to rename the network
- How to rename the groups
- How to identify and name the devices in the network
- How to set standard lighting scenes
- How to put the devices in the named groups
- How to adjust scene levels
- How to test the system (mimics)




# INTRODUCTION

When the lighting controls hardware has been installed by a contractor, a commissioning engineer attends the site.

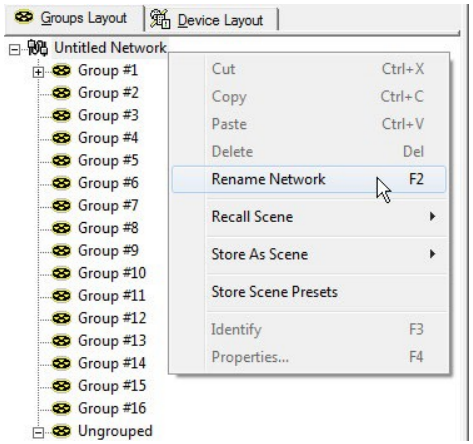
Using Toolbox, the engineer will undertake the following:

1. Connect to the Digidim network using Toolbox
2. Identify and name the Digidim and DALI equipment (devices)
3. Group the devices
4. Program scenes, sensor options and other control options
5. Test and adjust the system

## 1 Rename the network

To get started in programming a simple lighting system, let's first **rename the network** to something meaningful to you: the name of your company or the building, for example.

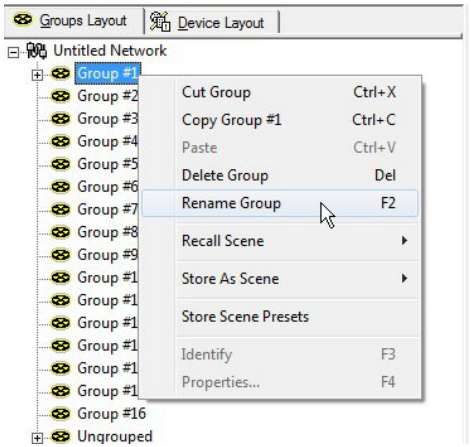
- Right click on the network name (top of device tree) and choose 'Rename network'.
- Alternatively, use the keyboard shortcut F2.




## 2 Rename the groups

Now let's **rename the groups** so that they're descriptive of the environment. For example, in a meeting room the groups may be named 'Whiteboard', 'Ceiling row 1', 'Ceiling row 2', 'Artwork'.

- Right click on group name (in groups layout of the device tree) and click on 'Rename group'.
- Alternatively, use the keyboard shortcut F2.

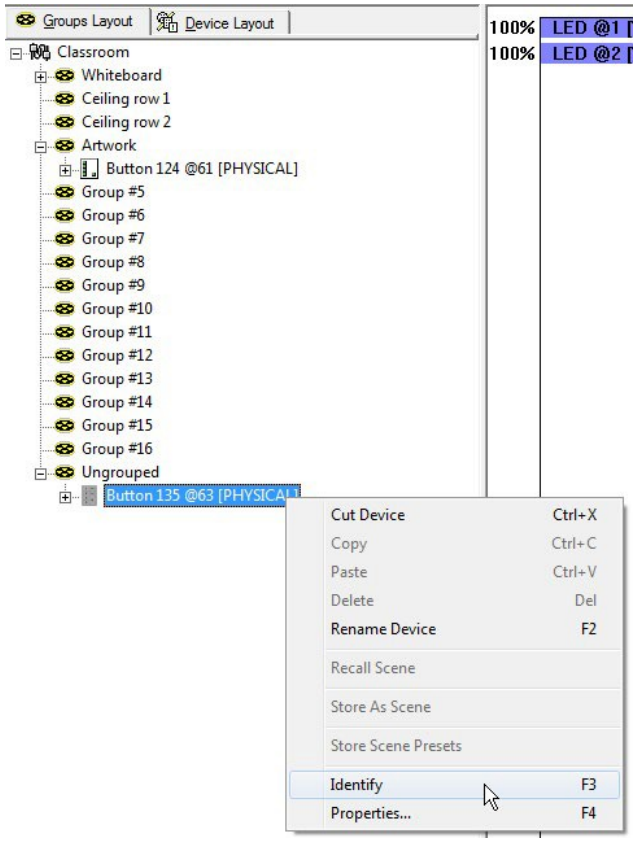


## 3 Identify and rename the devices

Next, we need to **identify the devices** to show which item in the device tree corresponds to which piece of hardware.

- In the device tree, right click each device and choose 'Identify' (shortcut: F3). You will know the process has been successful when you see the following:
  - load interfaces: lamps flash
  - button panels: LED top left of panel flashes
  - sensors: LED flashes in the sensor
- You can identify input units with no LEDs using their serial numbers.

**Rename** each device according to its position, eg 'Ceiling LED 01', 'Artwork lamp'.



## 4 Set the scene levels

Before grouping the devices, check to see that the control system works by **setting scenes 1 to 4 to standard levels** for all loads in the network.

Standard scenes ('Scene presets')

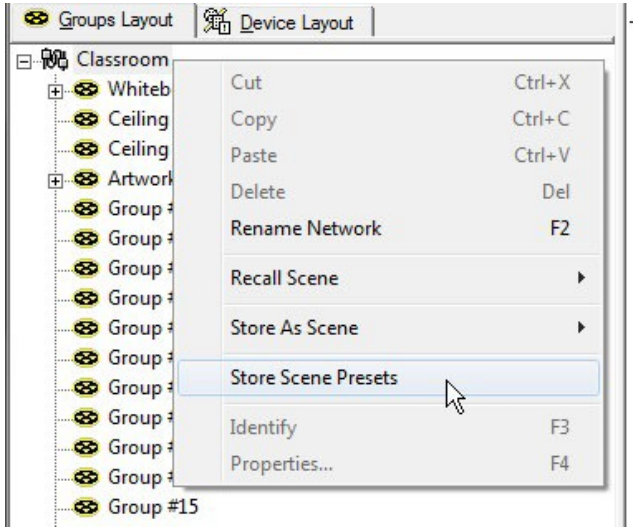
Scene 1 = 100%
Scene 2 = 75%
Scene 3 = 50%
Scene 4 = 25%

To do this, either:

- Right click the network name and choose 'Store scene presets'

Or

- On a button panel, press and hold buttons 3 and 4 for 10 seconds



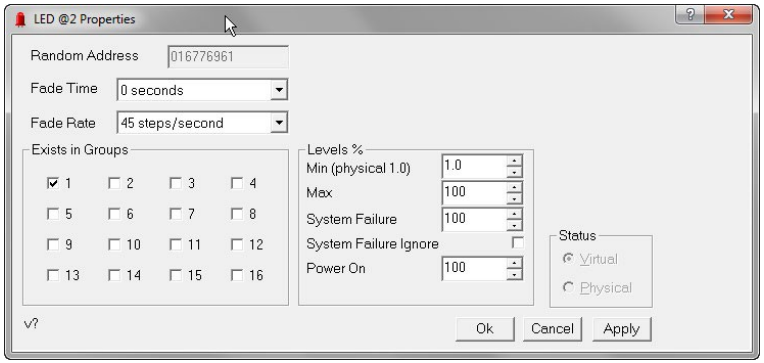
## 5 Add the devices to groups

Now you can **add your named devices to your named groups**. To do so, either:

- Drag and drop (in 'Groups Layout')

  Or

- Right-click on the device and choose 'Properties'. Select 'Group' (control) or 'Exists in groups' (load interface)




### Example

A classroom has eight fluorescent light fittings (fluorescent luminaires) in the ceiling. Each luminaire has DALI ballasts. A Digidim button panel on the wall is connected to the same DALI network. To make sure that those buttons control the eight luminaires in the ceiling in the same room, do the following with Toolbox:

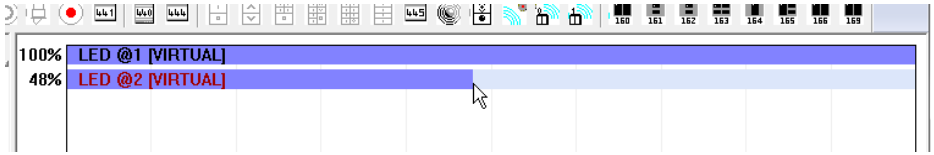
1. Connect to the network
2. Create a group and name it 'Classroom 1'
3. Put the DALI ballasts into group 'Classroom 1'
4. Put the button panel into 'Classroom 1'

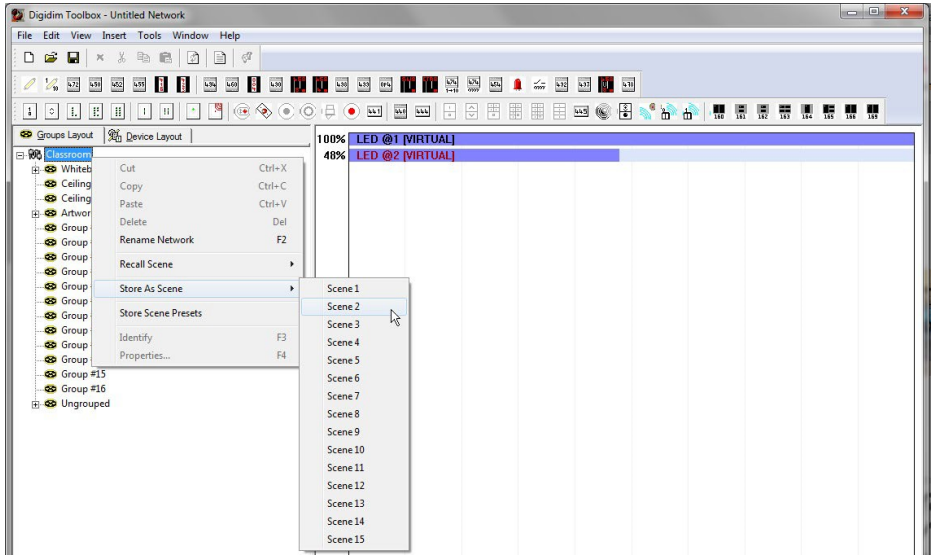
Now the button panel will send control messages to the DALI ballasts in Classroom 1 only (rather than turning on the lights in the next two rooms).

# 6 Adjust the scene levels

If the standard scenes are not what you want, you can **adjust scenes** to suit the application.

- Set the desired levels using the channel graph, then right click the network name and select ‘Save as scene’ and then the scene number (usually 1–4). This scene is stored to all devices in the network.
- To store a scene into a group or ballast right click the Group or ballast, then choose ‘Store as scene’.
- Scene levels are shown in the device tree.
- Use the ‘ignore’ setting to ensure that the device’s level isn’t changed when you recall a scene – when you want to turn out all lights apart from a particular set that is controlled independently, for example.

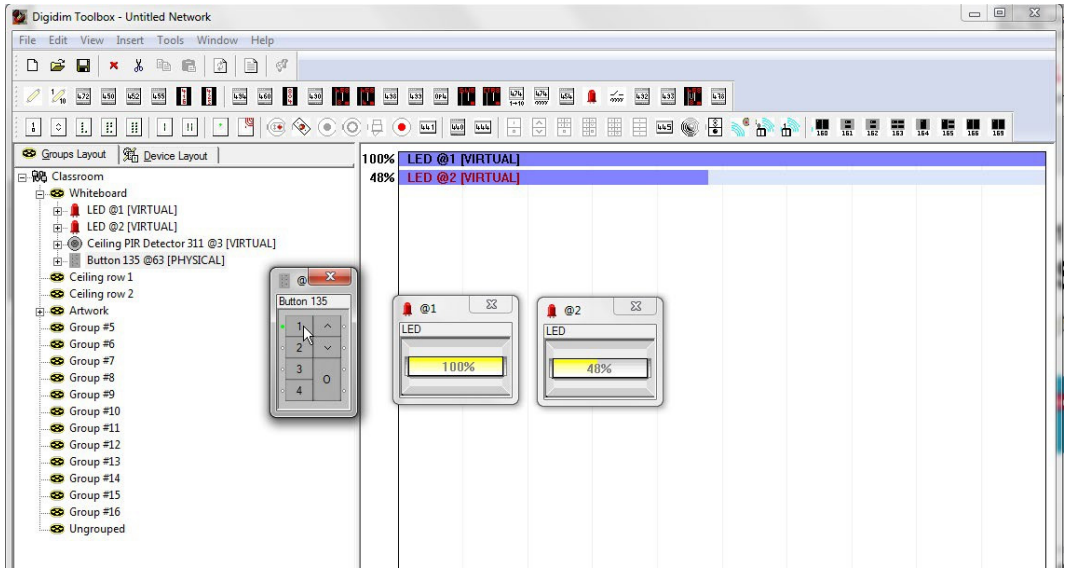


# 7 Test the system

Let's **test the system** to ensure it's working as you want it to.

- In the device tree, click a button panel.
- Its 'mimic' appears, replicating the physical version.
- Press the buttons on-screen to test the functionality.
- Alternatively, test the system by pressing actual buttons on a control panel in the user interface box.

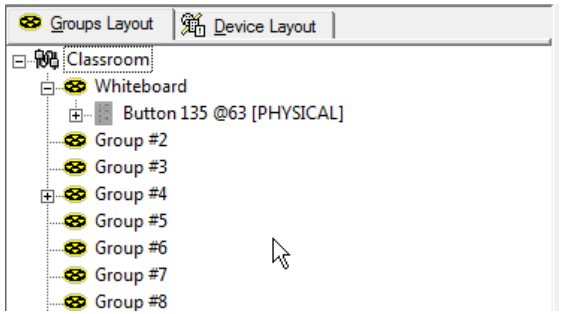


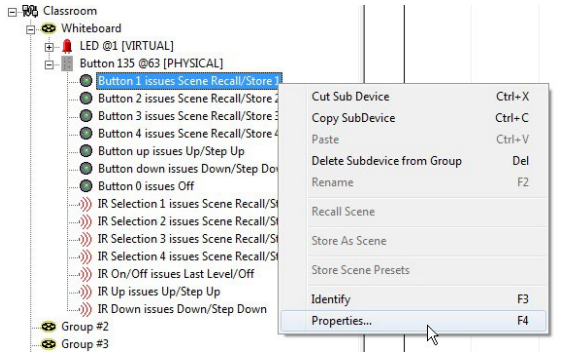
# 8 How to apply a fade time

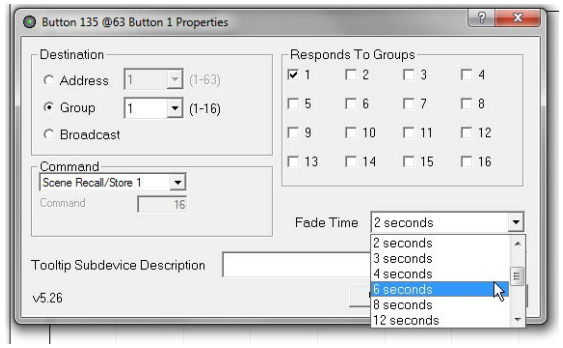
You can set the time it takes to transition from one scene to another, so that the lighting level changes smoothly.

Here is an example to create a fade time of six seconds when button 1 is pressed:

1. Expand the 'Button panel' item in the device tree (click the [+] symbol).
2. Right click 'button 1' and choose 'Properties'.
3. In the properties window, check that the command drop-down is Scene 'Recall/Store 1'*. Note that the list of options is long.
4. In the properties window, change the fade time to six seconds.
5. In the properties window, click 'Apply' then 'OK'.




To test the fade time, press button 0 to turn off the lights. Then, press button 1 and watch the lights go to 100%, with a fade time of six seconds.

* Scene Recall/Store 1:

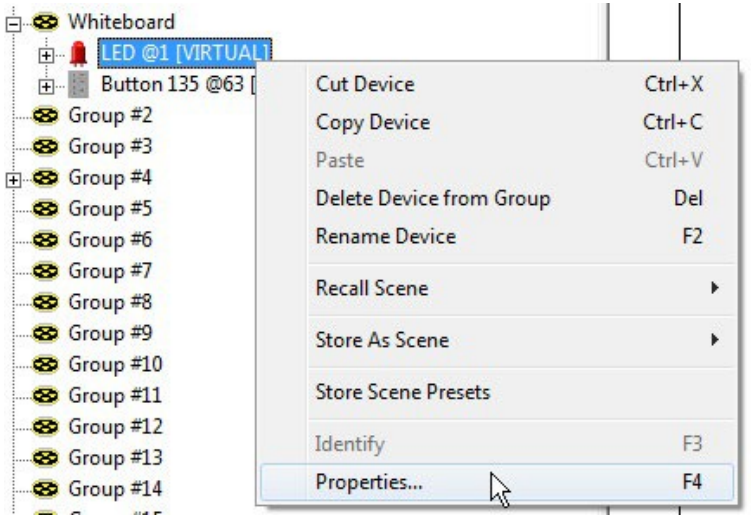
A short press of the button will recall Scene 1.

A long press will store the current lighting level as Scene 1.

# 9 Set a minimum and maximum level for lights

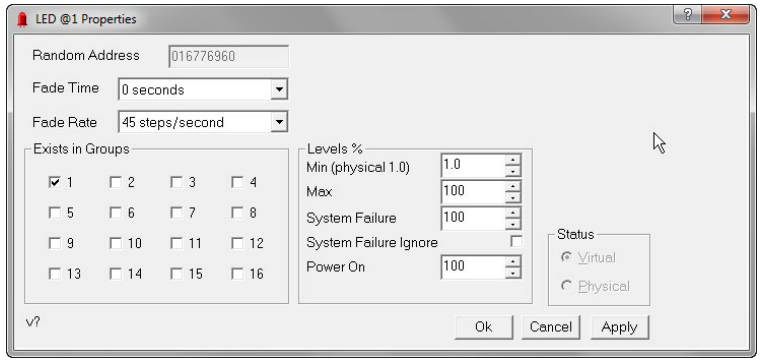
To set the minimum or maximum level for a load interface (an LED driver, ballast or dimmer), do the following:

- In the device tree, right click the load interface and choose ‘Properties’.
- In the properties window set the ‘Min’ and ‘Max’ levels.
- Note: the lowest min level is 1.0%. You cannot set the minimum below a load’s physical minimum (for example if a ballast or driver dims down to 10% or 5%, you cannot specify a minimum of 3%)
- Click ‘Apply’ and ‘OK’




You can also set these parameters:

- System failure: if the DALI network fails (for example if a DALI wire is cut), the load interface will automatically go to this level.
- Power on: the brightness level for the load interface when the DALI system is powered on.



# 8

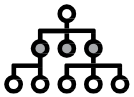
# Setting up occupancy detection in a Digidim Toolbox system

## IN THIS SECTION YOU WILL LEARN:

How to connect a sensor to the DALI network

How to refresh the Toolbox system

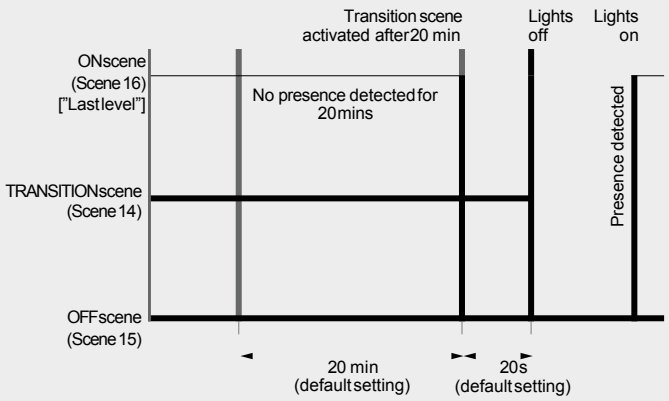
(to add the sensor to the network)



How to group and program the sensor

For presence detection
For absence detection

# INTRODUCTION TO SENSORS




In a Digidim system, sensor programming involves three stages:

1. 'Switch on scene': the sensor detects that someone is present.

   This is usually Scene 16, but we will use Scene 1 for this training exercise.

2. 'Transition scene': the sensor detects that no one has been present for some time and calls Scene 14*.

3. 'Switch off scene': the sensor detects that no one has become present during the transition scene and calls Scene 15*.

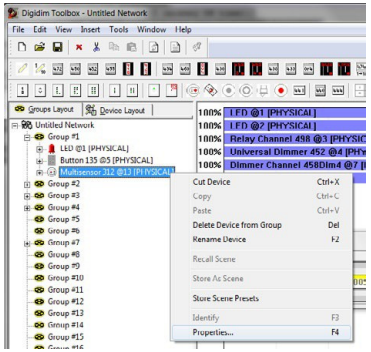
Scene 14 is auto minimum PIR, ie as no motion has been detected for a while, the lights dim down to show that the sensor is going to switch the lights off soon.

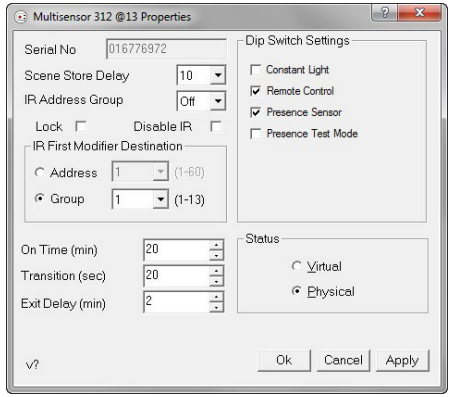
Scene 15 is off (0%)

*standard scene for this throughout the Digidim system

## 1 Disable IR

If you're not using an infrared remote control, **disable IR** in the sensor properties panel (right click on the sensor in the device tree).



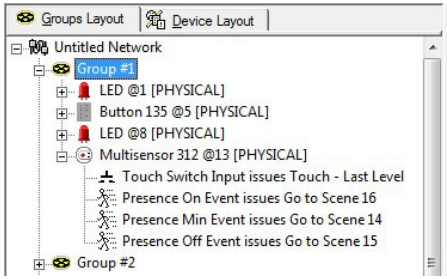



## 2 Group the sensor and loads

**Place the sensor in the same group as the loads** (one or two of the LED drivers) you want it to control.

For example:

- Drag the LED drivers into Group 1
- Drag the sensor into Group 1



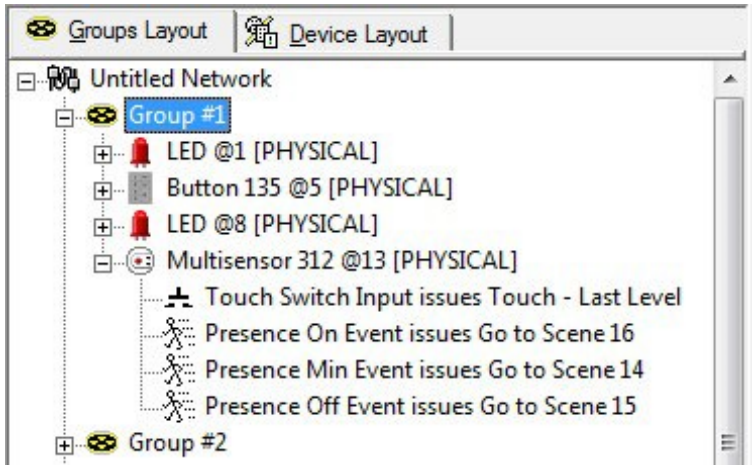
## 3 Select scenes for each stage

Next select which **scenes will be called for the on, transition and off events**.

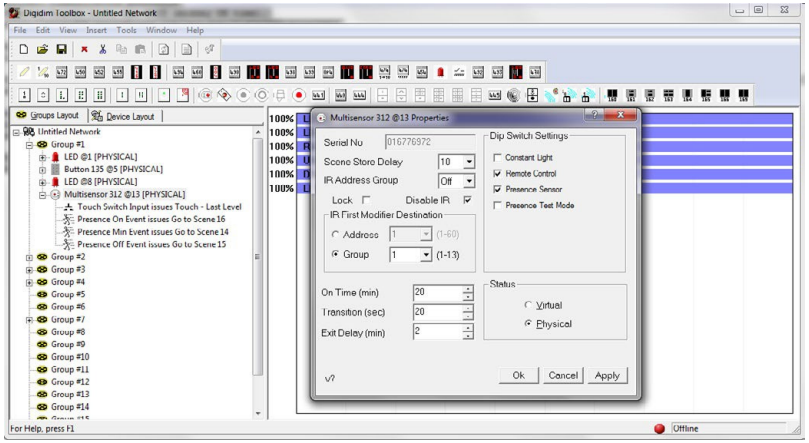
To do this, expand the multisensor item in the device tree by clicking [+] and right click each of the events. Under 'Command', select 'Go to Scene ..', click 'Apply' and 'OK'.

- **On event: Scene 1***
  This scene is recalled when presence is detected
- **Transition event: Scene 14**
  This scene is recalled when no presence has been detected for a while (default 20 mins)
- **Off event: Scene 15**
  This scene is recalled when no presence has been detected for a while during transition scene (default 20 secs)

*Note that, for the purposes of how to use this training kit, the on scene is 1, rather than 16, which is the scene most often used in real life applications.



## 4 Adjust the sensor timings




The multisensor is now set up to operate in presence detection mode so when someone enters a room the lights will go on.

A short time after everyone has left the room, the lights will dim down.

A very short time after that, the lights will go off.

Now you can **set the timings** for each of these scenes:

- In the device tree, right click on the multisensor and choose 'Properties'.
- In the properties window, set the following timings:
    - On time (min): 20 (as long as the sensor is detecting someone, the lights will remain on for another 20 minutes)
    - Transition time (sec): 20 (after the on time is over (nobody detected for 20 mins), the lights will dim down. They remain dimmed for 20 seconds, and then go off.

You can also set the exit delay time, which is the time during which the sensor is disabled after the lights have been turned off manually (eg by pressing a button):

- Exit delay (min): 2

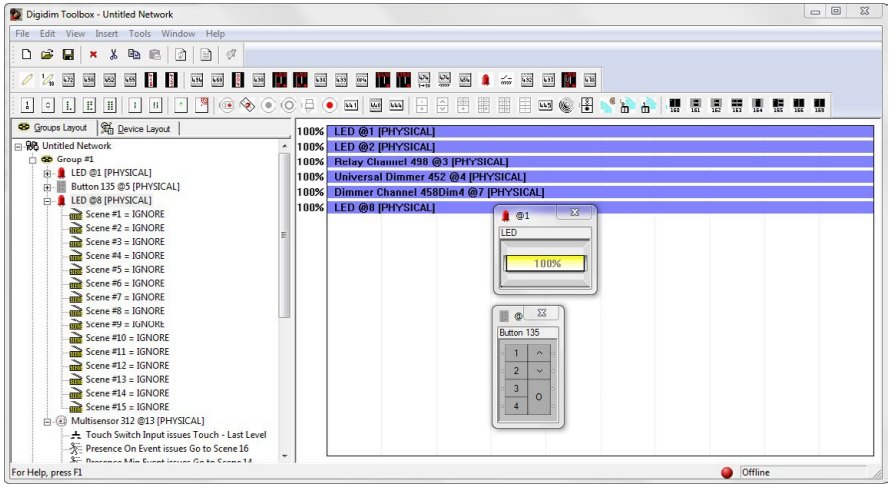
## 5 Check the scenes in the loads

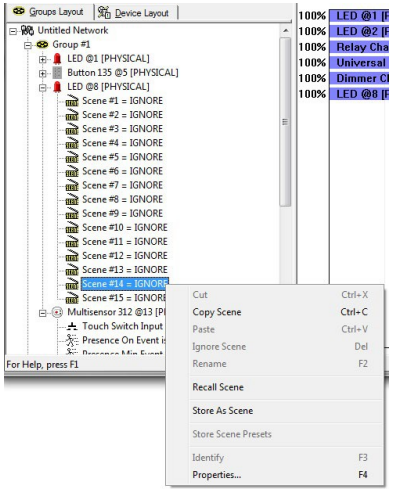
The multisensor will now recall scenes in response to what it is or is not detecting.

These scenes must be defined in the loads in the same group as the sensor. If one of these defined scenes is set to ‘ignore’, nothing will happen.

In Group 1, expand an LED driver (click the [+] symbol).
You’ll see Scenes 1 to 15 for the driver.

Scene 16 is not shown, because it cannot be reconfigured.

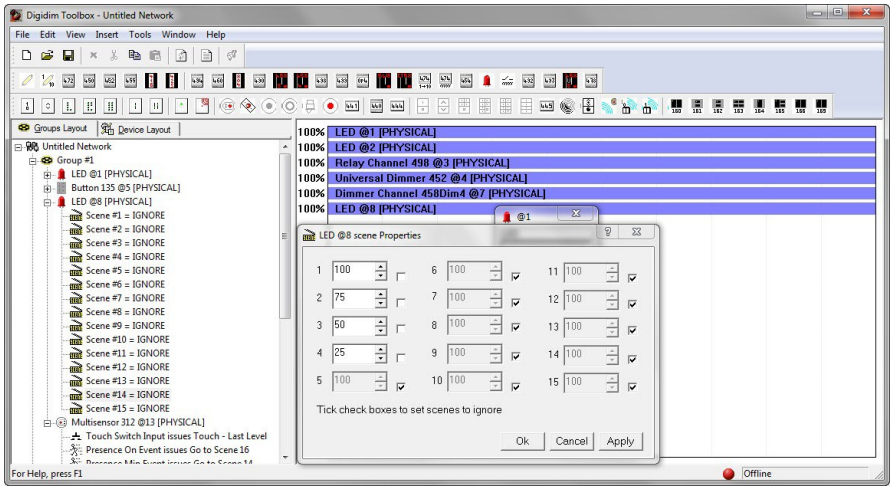


# 6 Program levels for Scenes 14 and 15

Now we're going to **program the intensity levels of the lights** by changing Scene 14 to 5% and Scene 15 to 0%.

| | |
|---|---|
| 1 | Right click 'Scene 14' and choose 'Properties'. |
| 2 | In the scene properties window, untick '14', to allow Scene 14 to be set. |
| 3 | In the '14' window, type '5' (or use the up/down arrows to adjust to '5'). |
| 4 | Click 'Apply'. |
| 5 | Untick '15', to allow Scene 15 to be set. |
| 6 | In the '14' window, type '0' (or use the up/down arrows to adjust to '0'). |
| 7 | Click 'Apply'. |
| 8 | Make sure that Scene 1 is set to 100%. |
| 9 | Click 'OK'. |
| 10 | If you want the sensor to control both LED drivers, program the scenes for the other driver, too. |



## 7 Test the sensor (part 1)

The multisensor is now set up to operate in presence detection mode in these ways:

- When someone enters a room the lights go on.
- A short time after everyone has left the room, the lights dim down to 5% brightness.
- 90 seconds after that (if still no occupancy is detected), the lights go off.

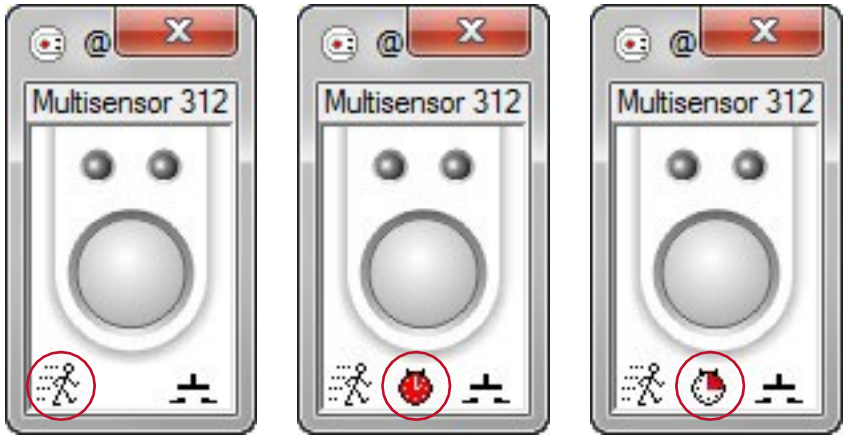
**To test it, use the multisensor mimic, and cover the multisensor.**

1. Cover the multisensor PIR detector (a paper tissue will do).
2. In Toolbox, in the device tree, click the multisensor to reveal the multisensor mimic.

## 8 Test the sensor (part 2)

With the PIR sensor physically covered, **use the mimic to test the multisensor's operation**:

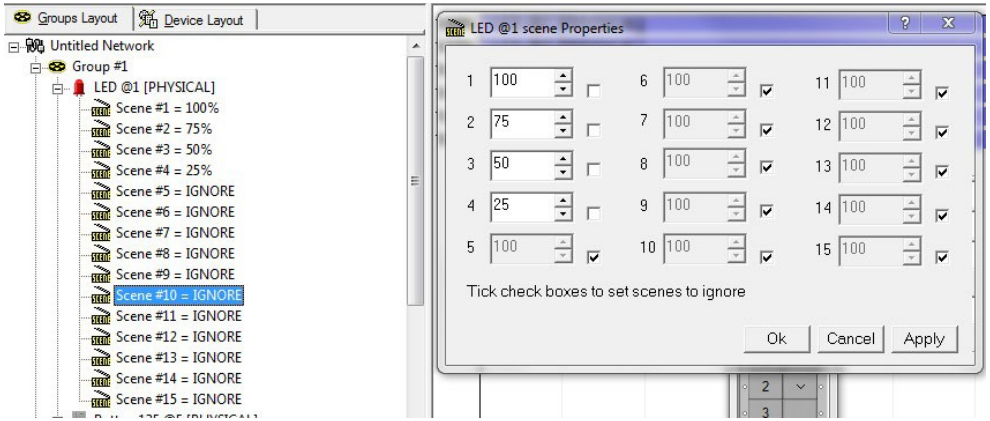
1. Click the 'runner' icon. Scene 1 should be called, and the LEDs are on at 100%. You can also check this in the channels graph. The sensor is in on scene mode.
2. Now click the 'full stopwatch' to trigger transition mode. Scene 14 is called, and the lights should be at 5%.
3. Click the 'time is running stopwatch icon' to trigger off mode. Scene 15 is called, and the lights should be at 0% (off).



9

## Program the multisensor and LED to Scene 10

Now we need to set the multisensor presence on scene to Scene 10 and set Scene 10 for the LED to ignore, using the same method as on p. 54.



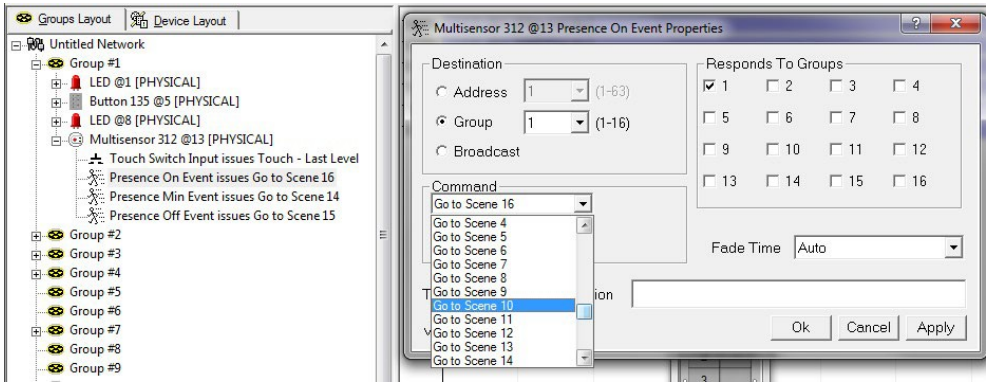
10

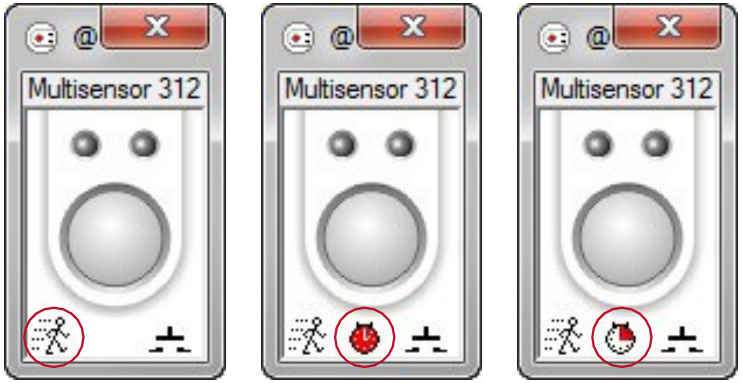
# Test the sensor set-up for absence detection

The sensor will dim and then turn off the lights when no presence is detected.

Test the sensor operation for absence detection using the same method as for presence detection.

- In the multisensor's mimic, when the 'runner' is clicked, nothing will happen when Scene 10 is called. This is because Scene 10 for the LED drivers corresponds to 'ignore'.
- Click the mimic stopwatch: the lights to go Scene 14.
- Click the mimic stopwatch again: the lights to off (Scene 15).



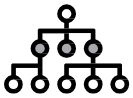



# 9

# Setting up ‘constant light’ in a Digidim Toolbox system

# IN THIS SECTION YOU WILL LEARN:

What ‘constant light’ is



How to program the system to run constant light

## What is constant light ?

If a room gets its light from daylight and from electric lights, there will be times when the daylight is so bright that little electric light is needed.

On a dull day, when there is not much daylight, the lighting loads need to provide more light in the room.

The constant light function dims or brightens the electric lights to maintain a particular level of light in part of a room.

Note: The Digidim Toolbox system offers Constant Light functionality, but for much more sophisticated Constant Light control, with options for lighting adjustment and control, we recommend using a Helvar router-based system, programmed using Helvar's Designer system. Contact your local Helvar representative for details.

## What you need to set up constant light with Digidim Toolbox

You need:

- a 312 multisensor
- luminaires with DALI drivers or DALI ballasts
- Light meter: use a luxmeter to measure light levels when setting the Constant Light scene.

When to set up Constant Light

To set up Constant Light, it is best to have no daylight or other light coming into the room. This means the room needs effective blinds or curtains, or no windows. If daylight cannot be prevented from coming in, you may need to set up constant light when there is no daylight. If you are setting up a system at night, check with the site that you will be granted access and that security teams are aware of what you are planning to do. Particularly with new build projects, make certain that the lighting system will be connected to mains power.

## Considerations when setting up Constant Light on site

When programming Constant Light with this training kit, you can 'guess' the level of light that you would like constant light to maintain. However, when programming Constant Light on a real site, to make sure that the target light level is set correctly, you will need to consider the following:

- Make the room dark: close all curtains or blinds in the room. For best results we recommend that it is carried out when levels of daylight are low or the blinds are drawn. Try to make sure that no outside light is coming in. This means that light level measurements will measure electric light only.

- Set up constant light when the room is furnished as it is intended for normal use. This is because light reflections in an unfurnished room are quite different from those in a furnished room, which will affect the light level measured by the multisensor.

- Note that in constant light situations the loads of all loads must be in the same plane because all loads controlled by constant light are at the same intensity level.

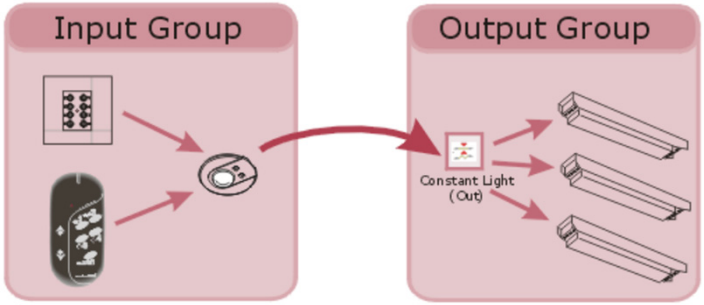
- If the sensor is located above a desktop, make sure the desktop is not covered in paper, which can also change light reflections to the light sensor.

- We recommend using the multisensor 312 with the limiter (to be detached by clicking and placing on the light sensor) as it shields the light sensor from direct sunlight.

## Programming steps: Input Group and Output Group

Two groups: Input and Output

Constant light operation in DIGIDIM systems requires the use of two groups: Input Group and Output Group.




Input group

The Input Group is for control devices (e.g. sensors, buttons) used to set up and control constant light operation.
The Multisensor 'Constant Light Out' component adds constant light control to all the control signals from devices in group 1. These commands control the devices in the output group (group 2)

Output group

The Output Group is for the load interface units (e.g. LED drivers, ballasts and dimmers) controlled by the constant light function.

Note that when the multisensor constant light function is controlling the lamps in the output group, all of the load interface units (LED drivers, ballasts, dimmers etc) in the group will have the same level. It is not possible to set up individual levels for individual lamps within the Output Group.

## 1 Rename groups

Rename ‘Group 1’ to ‘Group 1 INPUT’

Rename ‘Group 2’ to ‘OUTPUT’

## 2 Group the controls

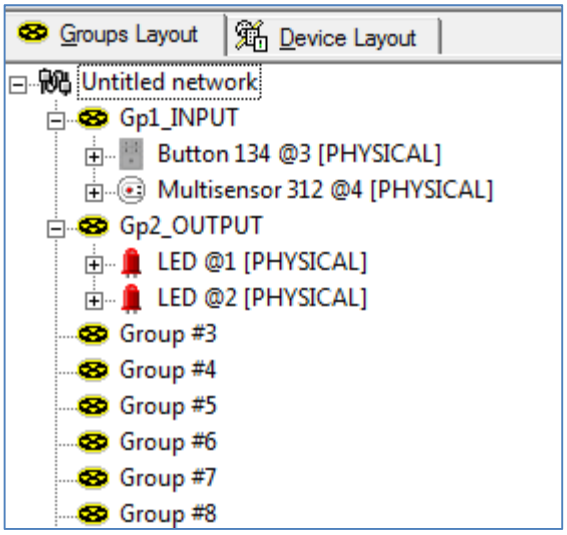
a. Put controls in Group 1.

Drag the multisensorbutt and button panels into Group 1 (INPUT)

b. Put loads (LED drivers) into group 2.

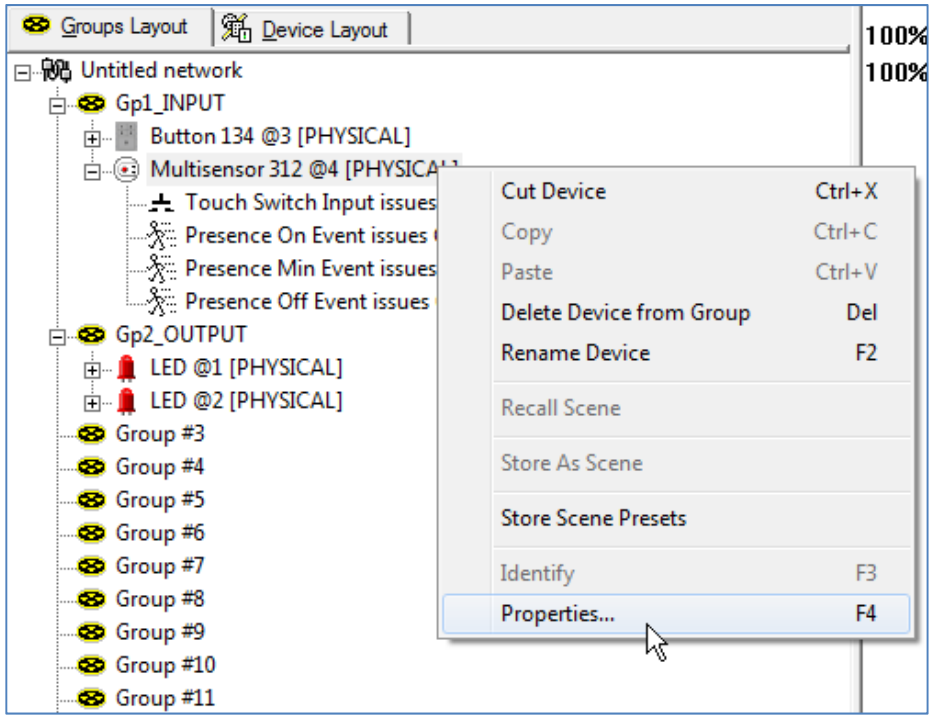
Drag the LED drivers into Group 2 (OUTPUT)

The device tree will look like this:

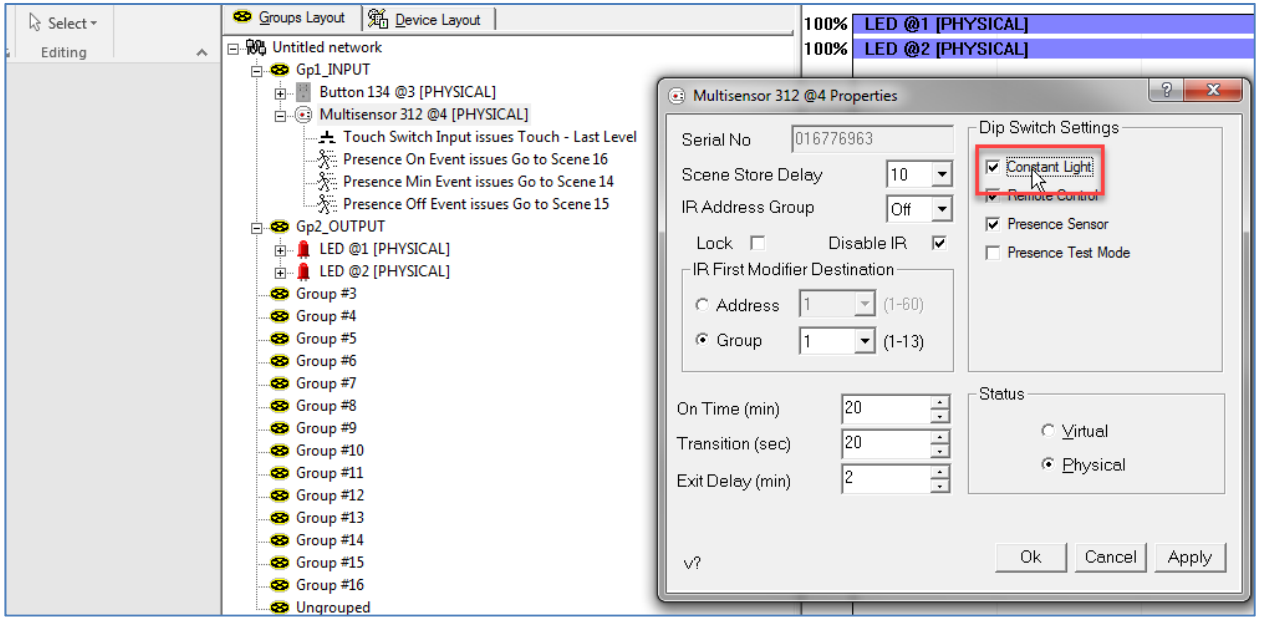


## 3 Activate 'Constant Light' function in the multisensor:

a. In the device tree in Group 1, expand the 'Multisensor' (click [+])
b. Right-click on the Multisensor and choose Properties



c. Tick 'Constant Light', then 'Apply' and 'OK'.

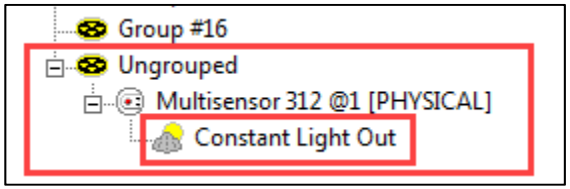


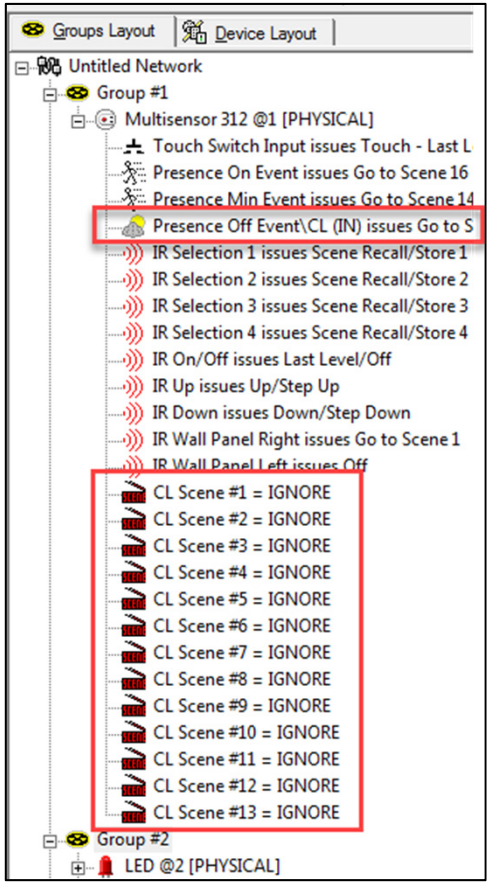
d. Activating 'Constant Light' makes 3 things appear in the device tree:
2 items appear in the Multisensor sub-device tree
1 item appears in 'Ungrouped':

i. The 'Constant Light In' item ("Presence Off Event\CL (IN)" appears in the Multisensor sub-device tree

ii. CL Scenes (1 to 13) appear in the Multisensor sub-device tree

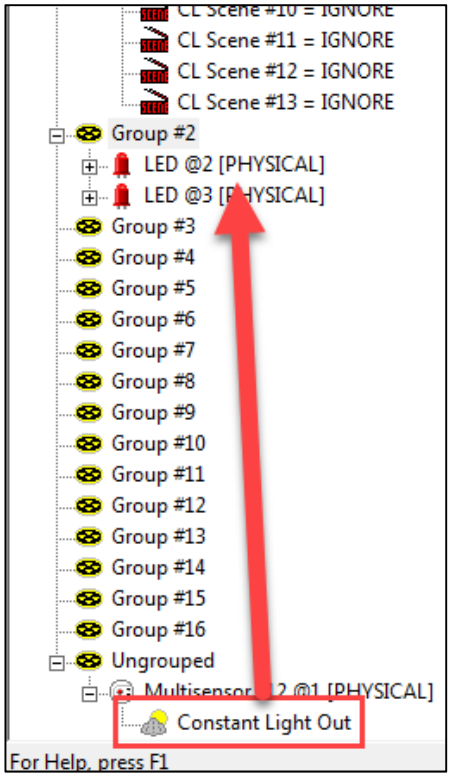
iii. 'Constant Light Out' in 'Ungrouped' (Multisensor 312 > Constant Light Out)



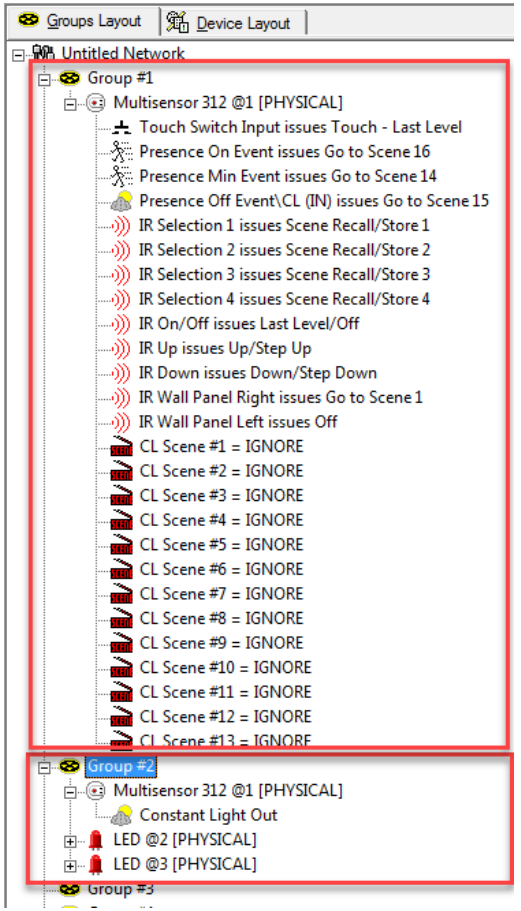



## 4 Make ‘Constant Light Out’ control the Output group:

Drag 'Constant Light Out' from ‘Ungrouped’ into Group 2




Constant Light is now configured for Groups 1 and 2, as shown here:



## 5 Set the Constant Light Scene (the target light level for the constant light function)

When the multisensor calls a constant light scene, the Multisensor will adjust the lamps in the Output Group to try and match the new target level.

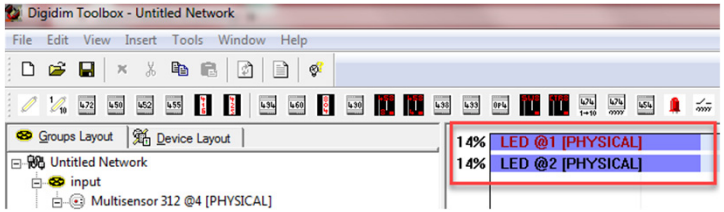
Note that when the multisensor constant light function is controlling the lamps in the output group, all of the load interface units (LED drivers, ballasts, dimmers etc) in the group will have the same level. It is not possible to set up individual levels for individual lamps within the Output Group.

*For the purposes of this training exercise, put a carboard box over the LEDs and sensor, so that the only light the sensor is detecting is the light from the LEDs.*

**To Set the Constant Light Scene:**

a) Make sure Toolbox is in Online mode (see bottom right of screen: green circle)

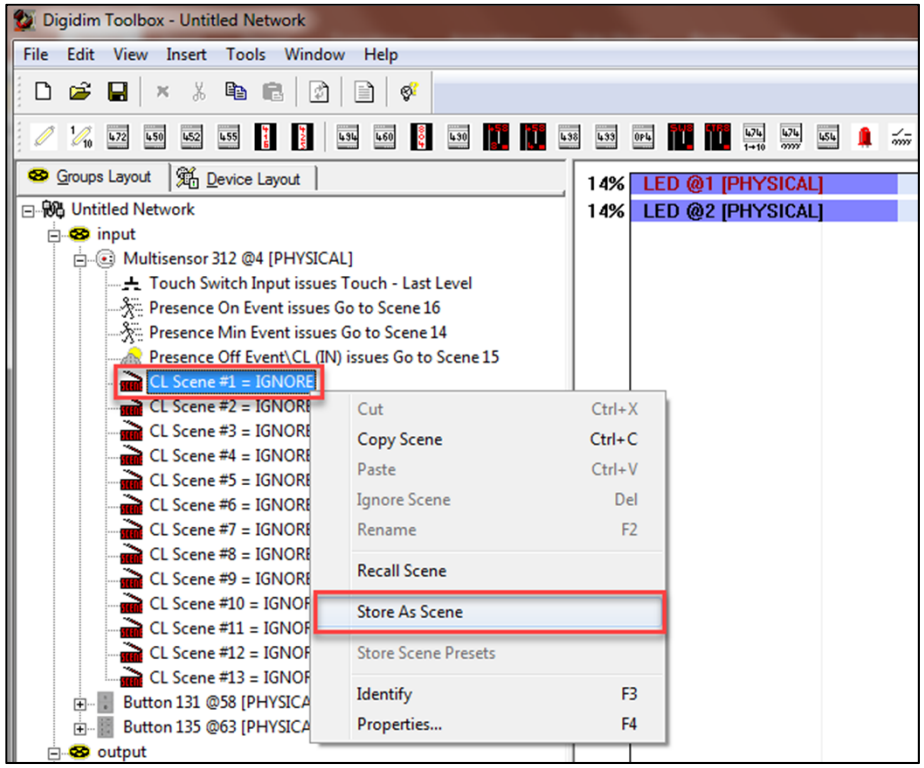

b) Adjust the light levels of each lamp in the Output Group to achieve the light level required (use a luxmeter to check this). Adjust using Digidim remote control is useful for this, or adjust using Toolbox channel graph or a button control.



## 5 Set the Constant Light Scene (the target light level for the constant light function)

### c) Save to "CL Scene 1" in Input Group Multisensor

When the electric light is at the correct level, right-click "CL Scene#1" (in the Input group's mulitsensor and select "Store as Scene".
This saves the light level as the Constant Light scene (target light level for the constant light function). Now when Scene 1 is recalled, the system will adjust the light levels constantly to maintain the target light level.



## 5 Set the Constant Light Scene (the target light level for the constant light function)

d) Test the system (by calling Scene 1).
Now that Scene 1 is set as a constant light scene, when you call Scene 1 (e.g. press button 1), the system will adjust the lighting to try to maintain the target light level.
If you have covered the sensor with a box, uncover the sensor and watch the channel levels (and the actual LEDs) as they adjust to try to maintain the target light level.

e) (Optional) : Set a Constant Light level for Scene 2.
If you like, set a second target light level and store as Scene 2 (or 3, or 4). When that scene is called, the system will adjust lights to the target level you set.
When you recall Scene 1, the system will try to achieve that target light level.

## 6 Constant Light in Operation

Once Constant Light has been set up, any user actions on the subdevices in the Input Group, will result in their commands being sent to the Multisensor, where they will be interpreted as modifications to the Constant light target level.

Examples:

- Raise or Lower commands will raise or lower the target level
- Recall Scene commands will set the target level to the level stored for the corresponding Constant Light Scene.
- The Multisensor will then compare the new target level with the level received by the constant light sensor. It will then issue the appropriate commands to the LIUs in the Output Group, adjusting the light level to match the target level.

For more detailed instructions, see the Toolbox Help section, or contact your technical support team.

## 7 Disabling Constant Light Control

You can disable constant light by clicking on the 'CL Scene #XX' below the group 1 multisensor - right-click on the right mouse button and select 'Ignore'

## 8 Can I adjust the rate at which constant light changes the light level?

When constant light is operating, the light level (if necessary) is changed about every 4 seconds, and only gradually. You cannot change this rate of change. If you require this, you can use a Helvar router system. If you cover the light sensor completely, the light level may rise for a short time to 100% and then gradually reduce. This is a feature included in case blinds or curtains in a room are lowered.

## Manual override of constant light control

Once programmed, the Constant Light function will control light levels automatically. You may want to manually adjust the lights.

If you want to manually override the load interface units in the Output group, you can copy the load interface units to other groups, and control them using other control devices.

You can add control devices (e.g. button panels) to the output group.

A user input (e.g. if a button is pressed) from a device that is not in the Input Group, it will override constant light operation until a new constant light level is selected by the use of a control device in the input group.

# 10

# Housekeeping

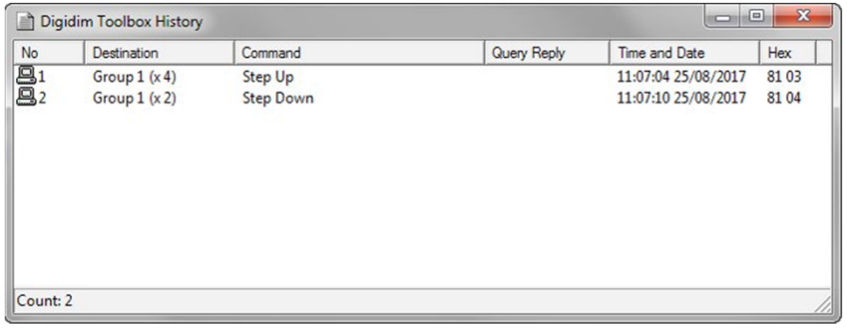
# CREATING A BACKUP OF THE LIGHTING SCHEME

- Having created a simple network or lighting scheme you now need to save the virtual Digidim version of the scheme. This allows it to be reloaded into Digidim Toolbox at a future date if you want to add to the scheme or make changes to device settings, or for diagnostic/maintenance purposes. Device names and group names are not stored in the devices themselves so the backup allows you to see these names when you reconnect to the system.
- To save the scheme to a file; select 'File', then either 'Backup...' or 'Backup As....' and choose a location for the file.
- The file will be saved with a .dal extension.

This backup also makes it easier for a support engineer to diagnose an issue or make changes without being on-site.

# HISTORY

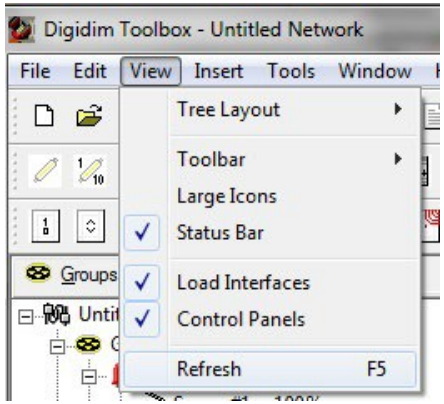
- Clicking on 'Tools' and selecting 'History' will show you a log of events, which is useful for troubleshooting.
- In the example here, you can see that four 'step up' commands were issued to Group 1 and then two 'step down' commands were issued to Group 1.




# REFRESH

- Clicking on 'View' and selecting 'Refresh' will rediscover the Digidim network.
- Use this if you add a new device, for example.

Note: sometimes when you have added a new device, it is useful to close and restart Toolbox, and completely rediscover the devices on the network.



# 11

# Application examples of the Digidim system

# TO RECAP

A Digidim standalone lighting control system can control the brightness of each light in the room. Depending on the system, each light can be at a different level, some groups of lights can be at similar levels to one another, or all the lights can be at the same level. A Digidim standalone lighting control system allows you to control lights individually, as part of a group, or to control all the lights in a system.

## What you have learnt:

- How to start thinking about what lighting controls are needed for different rooms
- What a standalone Digidim system and Toolbox can do
- How to set up Digidim Toolbox, and connect to a standalone Digidim network
- The fundamentals of load interfaces (LED drivers, ballasts, dimmers, etc) and control devices (button panels, sliders, sensors, etc)
- How to use addresses, groups, channels and scenes
- How to use Toolbox to identify, name, group and program control devices and load interfaces
- The basic uses of occupancy sensors
- How to program a sensor as part of a lighting controls system
- How to use Toolbox and Digidim diagnostics and housekeeping tools

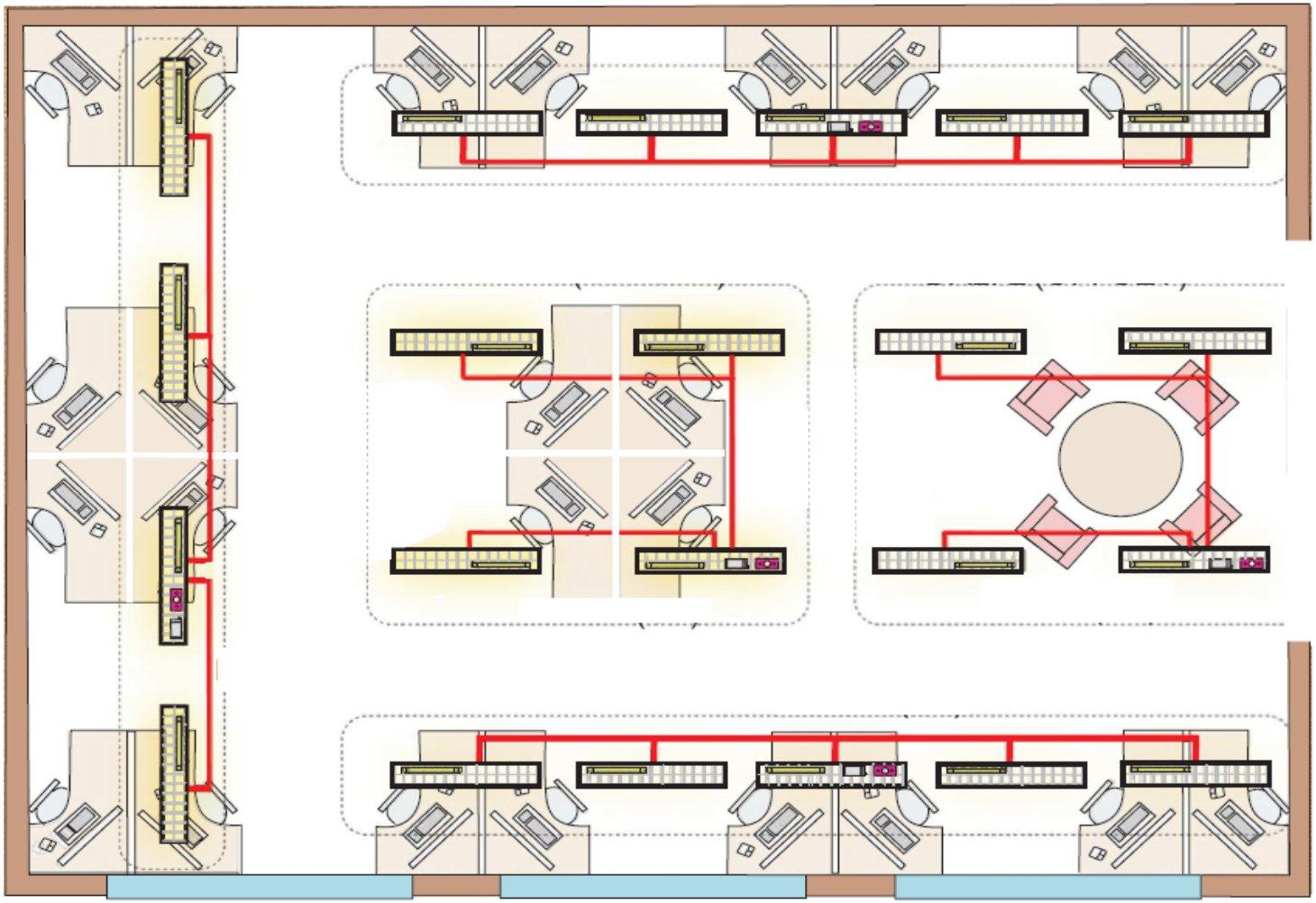
# APPLICATION EXAMPLES OF THE DIGIDIM SYSTEM

Here is a further example scenario for you to consider, using the same questions as on p. 6.

## OFFICE

| | |
|---|---|
| 1 | How will the **room be used**? This helps to decide what type of lighting controls should be provided. |
| 2 | **What lights** are in the room? |
| 3 | What are the different lights **used for**?<br>Do they need to be dimmable or just switched on and off? |
| 4 | What different **levels of lighting** are needed in the room for different situations and tasks? |
| 5 | Is the control **automatic or manual**? |

# SMALL OFFICE



# APPLICATION EXAMPLES OF THE DIGIDIM SYSTEM

Here is a further example scenario for you to consider, using the same questions as on p. 6.

## SMALL CLASSROOM

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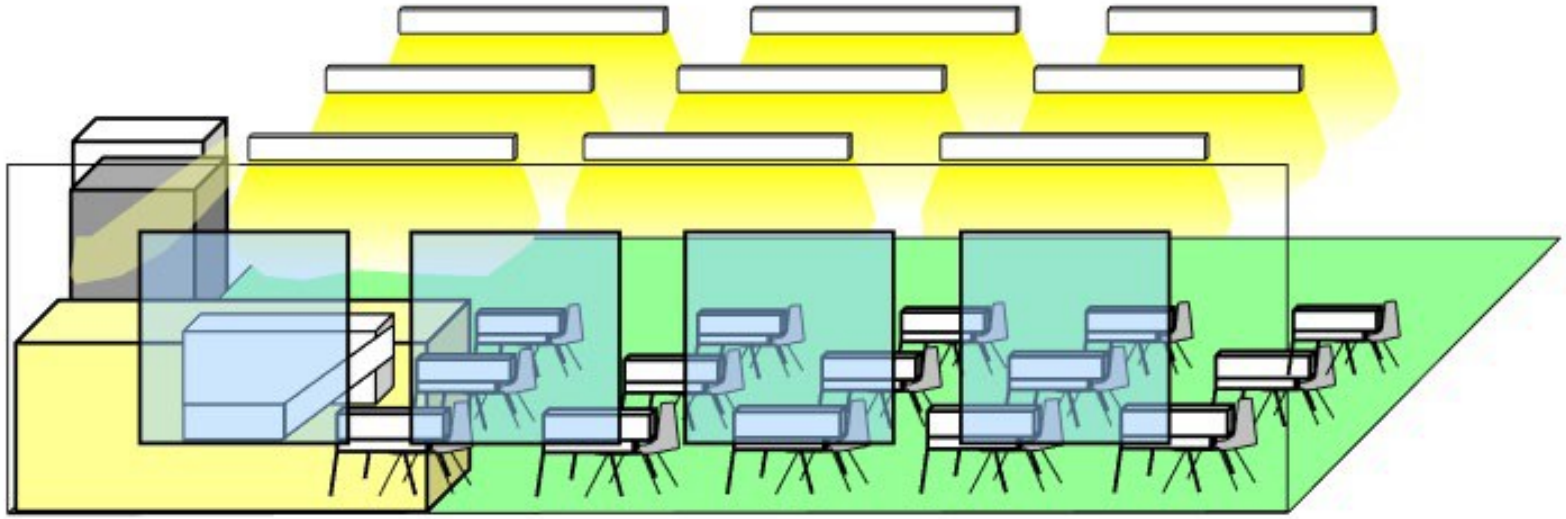
# SMALL CLASSROOM



# 12

# Further resources


[How to connect to a DALI network using Helvar's Digidim Toolbox software]

One four-minute video

[Digidim Toolbox: basic configuration of a Toolbox system in a room]

Seven short videos on using Toolbox

# 13

# Next steps

# WHAT ARE THE NEXT STEPS?

## What can we do when we have more than 64 devices to control?

- For larger systems, use Helvar's router-based systems, which are programmed using Designer software.
- Programing standalone Digidim systems is a great first step in learning how to program these larger systems, as they both use load interfaces, control devices, addresses, groups, channels, scenes and many other features.

**We recommend you keep using Toolbox, by using it to program larger systems, with more complex demands.**

**Contact your Helvar trainer for help and advice.**

There are many differences between a Digidim standalone system (a Toolbox system) and a Helvar router system.

### The main differences are:

| | Standalone Digidim system | Helvar router system |
|---|---|---|
| **System size** | Max. 64 addresses | Thousands of devices can be controlled |
| **Groups** | Max. 16 | Thousands of groups |
| **Scenes** | Max. 16 per load interface | 128 per device |
| **Colour temperature** | No | Yes: control the colour temperature of tunable white DALI LED lighting |
| **Scheduling** | No (no time clock) | Yes: schedule lighting using in-built astronomical clock |
| **Logic conditions** | No | Yes: apply logic conditions to lighting controls (eg if someone is in room A, keep the lights on in the corridor; if it's the school holidays, keep most lights off) |
| **Integration with building managemen t system** | Toolbox: limited | (Designer: yes, using protocols such as BACnet, Tridium, and Ethernet |