

revolutionary lighting control

Light

To signal, direct, or guide. Something that provides information or clarification. The particular quantity or quality of such illumination. To enliven or animate. Spiritual awareness; illumination.

Light~ing

To become light, brighten. The sensation of perceiving light; brightness. The illumination derived from a source of light. A source of light, especially a lamp, a lantern, or an electric lighting fixture. The pathway or route of such illumination to a person. A state of awareness or understanding, especially as derived from a particular source. A way of looking at or considering a matter; an aspect.

JCL

www.jclighting.com



FlexiDim™ Lighting Control System



A well-designed lighting scheme is widely recognised as being essential for successful interior design. Yet, in spite of the sophistication of the light fittings used, most people still control lighting using rows of rotary dimmer switches or with no dimming capabilities at all.

At its simplest, good lighting control involves being able to create ambience using artificial light in a repeatable way. So, whilst a dimmer switch allows control over light levels, there is little or no chance of easily repeating specific settings that are found to be effective.

FlexiDim™ is the first system to offer the sophistication of multi-area or whole property lighting control at an affordable price, and in spite of its sophistication, has easy to operate and stylish switch plates available in a variety of finishes, as well as compact control units that are easily installed and configured.

FlexiDim™ has been designed specifically for the UK and European market for both domestic and commercial use.

Beyond precise control over the actual levels of lighting, FlexiDim™ allows the transition between the current light levels and the desired light levels to be used for creative effect, with lights changing brightness in fractions of a second, minutes or even over several hours. This latter effect can be used in subtle transitions which nobody notices happening, creating an effect that is analogous to spectacularly effective design, without it being readily apparent why.

There is also the convenience and peace of mind that FlexiDim™ offers, i.e.:

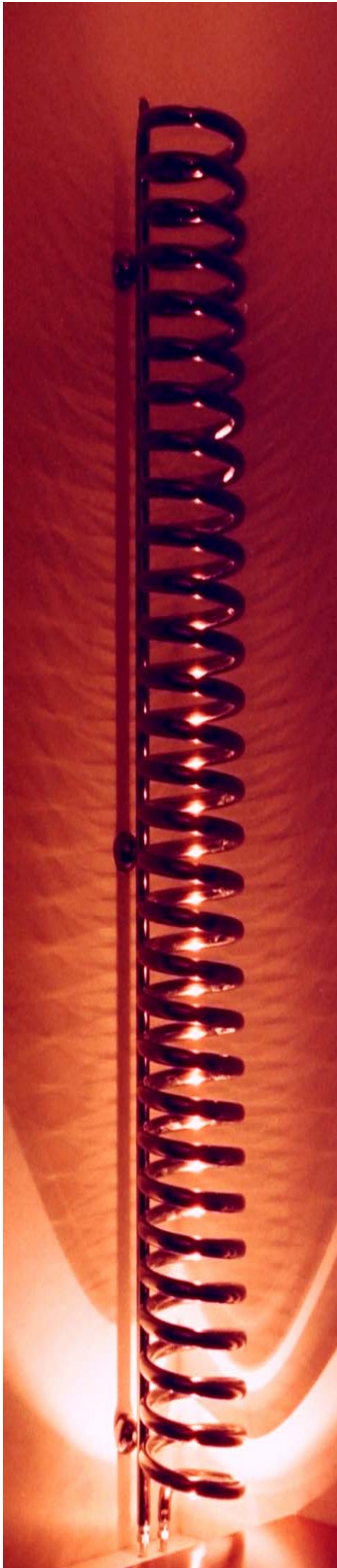
- **All-Off:** A single switch press that ensures all lights are turned off when leaving the property (similarly, a 'Welcome' scene can be created for your return).
- **Night Routes:** A single switch press to provide a low level of lighting from a bedroom to the bathroom or kitchen for night-time use.
- **Sequences and Timed Events:** Scenes can be created to simulate activity when the property is unoccupied, or to facilitate regular lighting activity (including links to precise sunset and sunrise times).
- **Remote Control:** FlexiDim™ offers a choice of remote control options (using infra-red and radio communication) from simple 'clickers' through to learning remote controls, bespoke remote control, Internet and SMS connectivity.
- **Colour Touch Screen:** allows full system control and configuration, plus interfaces to a variety of smart home applications such as multi-room audio
- **Creating and changing Scenes:** Changes to the configuration are easy using FlexiDim™'s Microsoft Windows® compatible software. The system is TCP enabled, allowing network and wireless connectivity and configuration.

System Specification

Switch Plates	Up to 64 per system. Each with up to 16 preset Scenes plus On/Off and manual Dimming buttons
Alternative System Inputs	Colour Touch Screen Optical Switches (for use with motion sensors, etc.) Remote Control Interfaces Curtain/Blind Controllers
Lighting Circuits (Channels)	Up to 128 per system
Power Handling	10W - 600W per circuit (larger circuits can be split across Dimmer Channels) May be increased to 1000W by 'dualling' 2 circuits together
Scenes	Up to 1000 per system
Switch/Channel/Scene Limitations	No limitations or hard-wired zones.
Dimming Resolution	1% (0.5% during transitions)
Channel Transition Time	0 - 30 seconds. (0.5 second increments) 35 seconds - 6 minutes (5 second increments) 8 minutes - 3 hours 50 minutes (2 minute increments) Each Channel within a Scene can be set individually
Pre-transition Delay	0 - 15 seconds (0.5 second increments). Each Channel within a Scene can be set individually
Linked Scene Delay	0 – 2 hours (10 second increments) Specific day and/or time Relative to sunrise/sunset
Operating Temperature	0°C - 40°C, 0°C - 90% humidity non condensing
Data Cabling	6/8 core alarm cable or Cat 5 data cable 100m / 1000m respectively
Mains Cabling	Conventional Twin & ECC
System Resilience	Optional automatic switching between main and backup system, audible system alarm
System Programming	Via Microsoft Windows® compatible software (supplied as part of the system)
Remote Control	433MHz FM 38KHz IR via learning remote control
Real-time Clock	Automatic GMT/BST adjustment Automatic calculation of sunrise/sunset
Mains Supply	220-240v ac 50Hz
Emissions & Immunity Compliance	EN50081-1, EN50082-1 EN55015, EN61000
Safety Compliance	EN60335-1



Lighting Control Systems



A natural and obvious progression from today's emphasis on effective lighting is to have a method of saving, recalling and re-using certain lighting effects that have been created. This requirement can be especially important in commercial premises such as offices, restaurants and hotels where changes to light levels cannot be left to chance and need to be trusted, reliable, consistent and repeatable. Coupled with technological advances in various types of home automation, these requirements have led to the development of lighting control systems.

A lighting control system is possibly the most striking improvement that can be made to either a property. It allows you to take control of all the lights (both inside and out) through the use of neat and compact control keypads (instead of a wall-cluttering bank of unsightly switches), and allows you to set lighting scenes throughout the property at the touch of a button.

Lighting control can also be integrated with a variety of other appliances and systems, from security and fire systems through to integration with home entertainment systems for convenient, slick and stylish living, or presentation systems for hassle-free business meetings.

Adding a lighting control system to your property gives you additional ways to express yourself and to define and emphasise certain key or favourite features.

In its simplest form, a centralised lighting control system will allow you to set up and save several different scenes (or moods) of lighting for a room or area, and then to recall any of those pre-sets at the touch of a single button.

Other more advanced features include multi-room and cross-room functionality (whereby any switch can control any light in the property), control over exterior and garden lights, motion and sunrise/sunset sensors, wall sockets for lamps and a number of related appliances (extractor fans, garage doors, water features, etc).

Interfaces are also available for SMS and internet access to your lighting system (to make changes while you are away or to prepare for your return). In addition, the built-in timers give the ability to set up automated lighting activity and security sequences (for peace of mind while you are away).

The following are some of the benefits of a centralised lighting system:

- The brightness of all lights can be varied
- The rate of change of brightness (transition or fade time) can be varied
- Lighting can be quickly and easily changed to suit the current mood or activity
- Special features in a room can be highlighted

- Key scenes and settings can be stored and recalled whenever required
- Lighting can be timer-based or event-driven
- Dimming lights saves energy and prolongs bulb life
- Dimmed lights are much easier on the eye and reduce glare
- The additional security measures that can be achieved with a centralised lighting control system give absolute peace of mind when away from home
- A lighting control system will offer interfaces to other lighting-related and home-automation appliances

A variety of lighting control inputs is generally available, for example:

- Switch Plates with pre-set Scene buttons
- Touch Screens
- Motion detectors, daylight sensors
- Remote controls
- Sunrise / sunset sensors
- Built in timers and sunset/sunrise calculators

A centralised lighting system can control other lighting-related appliances such as:

- Bathroom extractor fans
- Window blinds or curtains
- Home entertainment systems
- Home security systems
- Water features
- Garage doors and Gates

FlexiDim™

FlexiDim™ from JCL is one such lighting control system that is able to offer all of the features and functionality listed above.

JCL offers an obligation-free site survey and quotation service to homeowners, developers, designers, architects and other interested parties.



Lighting Design



Effective lighting design is becoming an increasingly popular and important part of our sophisticated homes and lifestyles, and whilst we are all familiar with the option of having a dimmer switch to help control a certain light, or a light on a timer that can be set to come on when the house is empty, few of us have had the opportunity to explore lighting possibilities any further.

The basic elements of a successful lighting design are both functional and aesthetic, with three types of lighting to be considered:

- Ambient Light

This is the general overall lighting in the area, for example, a central ceiling fitting, or a number of ceiling downlights capable of lighting a whole room.

- Task Lighting

This is lighting for a specific function, usually requiring bright light with the light fittings being either directional or close to the task area in order to avoid shadows and obstructions.

- Accent (or Feature) Lighting

This is used to highlight points of interest, to give extra visual appeal or to enhance and add to the quality of an area. For example, architectural features, artwork and special objects or areas all benefit from accent lighting which also draws attention to these features or objects.

Incorporating all three elements is achieved by 'layering' the different types of light in order to create each and all of the desired effects in a room or area.

Initial Planning

Planning a lighting scheme starts with answering the following questions for each of the rooms or areas to be lit:

- What type(s) of lighting is/are required?
- How do you want the space to look?
- Are there any special lighting needs that should be addressed?
- How much daylight is available to compliment and work with the lighting?

In response, take each room or area in turn and decide on the lighting requirements based on the questions above. The resultant lighting must be flexible for the many and varied activities in each of the rooms, with the general emphasis on atmosphere and mood (ambient and accent lighting), and specific tasks such as cooking, reading, working, shaving, etc. catered for separately (through the use of task lighting).

Light Fittings



In planning the lighting scheme, decisions on the types of light fittings and bulbs will be largely based around the type of lighting required (task, ambient or accent).

Nowadays, lights and lightbulbs are available for just about every type of lighting effect imaginable. Some lights shine in a specific direction; others in all directions, some radiate even and shadowless light while others have direct focused light that intentionally creates shadows and contrast. Bulbs also have a specific warmth or coolness to the light they produce. Therefore it is important to consider the type of fitting and bulb to be used during the design and planning phase as opposed to deciding on these afterwards.

Other factors to consider when choosing light fittings include the practicalities of installing the chosen light, the ease of changing bulbs in a particular location, plus the power requirements of the light fitting.

Thinking in terms of 'layering' lighting, no single light will be perfect for all applications. Not only does layering give more options for how the space is lit, (more than just on or off), but each type of fixture can do what it does best. For example, track lights are great for creating accent lighting, under cabinet lights for task lighting in a kitchen and decorative fixtures for providing ambient light. This layering strategy is critical to creating a rich visual environment.

Dimmable Lighting

Spectacular effects are surprisingly simple to create once dimming capabilities have been included in a lighting scheme. In addition to this are the reduced energy consumption and also the soothing effects that are felt when dimmed lights are used.

An extension of creating lighting effects using dimmable lights is to be able to save and then recall these settings using 'preset' buttons. This is a real convenience, allowing different moods or scenes to be recalled at the touch of a button, and is a function that is offered by the sophisticated lighting control systems available today.

JCL Partners



JCL has a number of partnerships with FlexiDim™ Distributors and Lighting Designers offering a comprehensive lighting design, supply and installation service ranging from whole property solutions to single rooms and gardens.

For more information, please contact JCL.

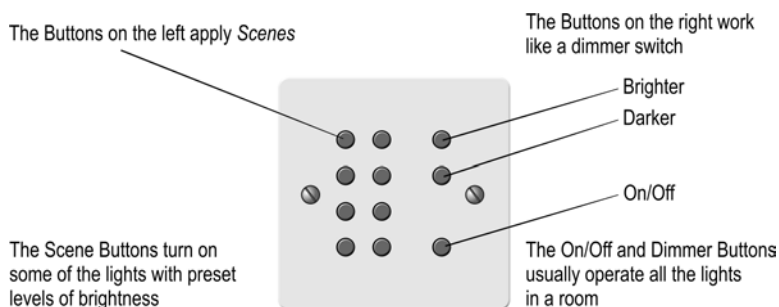
FlexiDim™ Switch Plates

FlexiDim™ Switch Plates are the user's 'control pads' for their lighting system. As such they are easy to use as well as being smart, stylish and easily matched or coordinated into their setting (with a variety of finishes available).

To satisfy the various user requirements in terms of use and environment, FlexiDim™ Switch Plates are available in a number of different finishes, as well as two basic types (4-Scene and 8-Scene), which refer to the number of pre-set Scene buttons each type of Switch Plate has (and each Scene Button can store up to 2 related Scenes).

In order to maintain familiar light switch behaviour, FlexiDim™ Switch Plates each incorporate three buttons whose default behaviour is as follows:

- **On/Off** Toggles lights between on and off, in the same manner as a conventional switch.
- **Up** Manually increases the levels on the lights in the same manner as a conventional dimmer switch.
- **Down** Manually decreases the levels on the lights in the same manner as a conventional dimmer switch.



Switch Plate Options

FlexiDim™ Switch Plates are available in a variety of different styles and finishes in order to suit all interiors.

Satin stainless steel finish is standard, and other finishes are available:

- Brass – satin finish
- Chrome – polished finish
- Antique Bronze

Alternatively, blank plates can be supplied to allow you to get a custom finish applied before returning them to JCL for assembly of the switch mechanism.



Illumination

FlexiDim™ Switch Plates also feature illumination to make night time location and use of the switches easy and to highlight the on/off button.

Illumination is via an LED situated just above the On/Off button. Various LED colours are available, including a fully colour-programmable option in order to allow the Switch Plate to blend in with or match the surrounding area. The LED brightness is also dimmable from 100% to fully off.

Installation Information

The Switch Plates measure 90mm x 90mm and are therefore the same size as a conventional switch plate, and fit in to a standard size wall box (35mm or 40mm depth).

Being just 1.6mm thick, the plates sit flush against the wall with stylish 'hex head' screws which eliminate the need to 'line up' the screw heads for a perfect finish.

Alternative Input Devices

FlexiDim™ has a variety of 'Input Devices' other than its Switch Plates. These include the following:

- Remote Controls
- Colour Touch Screen
- Optically Isolated Switches (for use with Motion Sensors or Daylight Sensors)
- Internal Timers including Sunset / Sunrise times
- SMS interface



FlexiDim™ Core Components

Scene & Switch Controller



The Scene and Switch Controller forms the central point of the FlexiDim™ system.

The Switch Controller 'listens' to messages from all the Switches on the system and combines these onto a single cable which it uses to send messages to the Scene Controller in order to make changes to the lights on the system. Each Switch Controller handles up to 16 Switches and up to 3 Additional Switch Controllers (i.e., 64 Switches) can be included in each FlexiDim™ system.

The Scene Controller 'listens' to the messages from the Switch Controller, interprets the required Scene changes and sends control messages to the Dimmer Modules in order to make changes to the lights on the system.

As many as 1000 Scenes can be created and assigned to any of the buttons on any of the Switches in the FlexiDim™ system.

Configuration is via built-in wired or wireless network connectivity, and the supplied Windows® compatible software. Access via the Internet is also possible, subject to a suitable broadband connection.

Dimmer Module



Each 8-Channel Dimmer Module regulates the mains supply to up to 8 lighting circuits using 'hard fired, leading edge phase control' whereby the light is switched on between the start and end of each half cycle of the mains supply, and switched off again at the end of each half cycle. By controlling the exact point of switching to within a few millionths of a second, very precise control is obtained over light levels and the way these levels change from one value to another.

Each Channel of a Dimmer Module can control a load of 600W, although 1000W loads are possible by connecting adjacent Channels. These loads are subject to an overall limit of 2400W for the Dimmer Module (8 Channels) and, given a typical mix of light fixtures, this rating is unlikely to be exceeded in most environments.

The 8-Channel Dimmer Module can dim tungsten, mains halogen (GU10), low voltage halogen with wire-wound and electronic transformers, cold cathode as well as providing on/off control for all other inherently non-dimmable sources.

Other types of Dimmer Module are available for fluorescent (where dimming is achieved in conjunction with high frequency dimming ballasts), LED or for especially large loads.

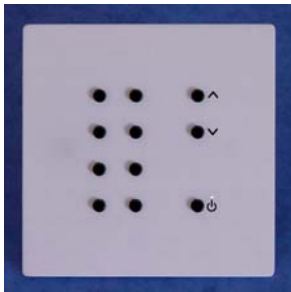
Mains Relay Module

Where on/off switching but not dimming is required (for example, with a non-dimmable light source, an extractor fan or a water feature pump), a Mains Relay component is available in either 4-Channel or 8-Channel versions, saving cost over the use of a Dimmer Module Channel for these applications.

Switches

The Switches in a FlexiDim™ system do not control mains power directly; instead they send messages to the Dimmer Modules via the Switch Controller and Scene Controller. The supply to the Switches is low-voltage, therefore these Switches can be installed in places where a conventional mains switch would be unsafe, such as a bathroom.

Each Switch Plate consists of either 4 or 8 user-definable Scene buttons, as well as the standard Dim Up, Dim Down and On/Off buttons. Switches also feature LED illumination in a range of colours.



FlexiDim™ Switch Plates are available in a range of finishes with high grade brushed or polished stainless steel as standard, and a variety of other metal finishes available on request (brass, antique bronze, etc.) plus powder coating with any BS or RAL colour.

Optically isolated switches for use with motion detectors and daylight sensors and other types of 'push' switches are also available as part of the FlexiDim™ system.

Remote Control

Convenient remote control capability is available for FlexiDim™ via a 250m range receiver and 4-Scene Remote Control handsets.

In addition, FlexiDim™ integrates seamlessly with Philips Pronto, AMX and Crestron systems, and is also controllable via the Bang & Olufsen Beo4 remote control. Other remote control interfaces are available upon request.

Colour Touch Screen

The ultimate way to control your lighting, home audio and other smart home appliances is through the use of FlexiDim™'s Colour Touch Screen.

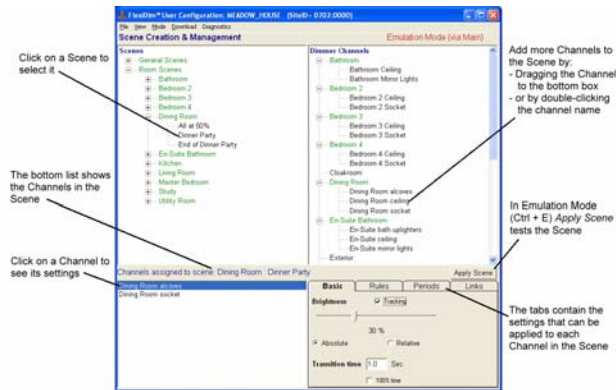


FlexiDim™ User Configuration

FlexiDim™ is supplied with a unique Microsoft Windows® compatible User Configuration Utility, allowing direct control of all the lights in your home from your PC. This makes the set up of your lighting system and the creation of Scenes and other lighting effects fast and simple, with the ability to preview any new or changed scenes without having to download them to the lighting system until you are completely happy with them.

Fast and Simple...

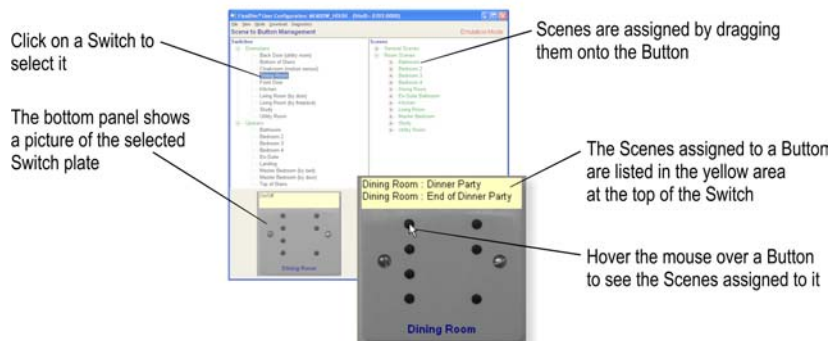
The following steps show just how quick and easy it is to set up lighting Scenes and effects using FlexiDim™:



- 1 Create a new Scene and give it a name
- 2 Add the required Lighting Channels to the Scene
- 3 Select the Brightness level and Transition time for each Channel in the Scene
- 4 Apply the Scene and make any adjustments as desired
- 5 Assign the Scene to a Switch Button
- 6 The Scene is now invoked each time that Switch Button is pressed.

Scenes are created using the 'Scene Creation and Management' screen in the FlexiDim™ Configuration software (see above), and assigned to Switch Buttons using the 'Scene to Button Management' screen (shown below).

Select Scene to Button Management (Ctrl + F3)



Scenes can also include timed events, delays, linked Scenes and extender Scenes. For example, changes to your lighting can occur based on a specific time of day, based on the time of sunrise and sunset, or based on a time interval from the last change. These features are particularly useful when setting up automatic lighting activity and security lighting activity to run when the property is empty.

Including Other Appliances

Although it is primarily a lighting control system, FlexiDim™ can take control of other lighting-related appliances in your home such as extractor fans, garage doors, window blinds, water features, home entertainment systems, etc.

This means that these appliances can be controlled in conjunction with your lights, for example, upon entering the bathroom and switching the lights on, the extractor fan can be set to run and then switch off after 5 minutes. In addition to this, FlexiDim™ can also control circumstances when the extractor fan would not run (such as in the middle of the night when you don't want to be disturbed by its noise). Similarly, garage doors or gates can be set to open when the main house lights are switched off for exit from the property, and then to close again 10 minutes later. Garden water features can be set to run at certain times of the day or to turn on and off when the garden lights do the same. The possibilities really are endless.

Configuration Files

The information pertaining to the set up of FlexiDim™ (such as described above) is stored in a Configuration File for the property. The user has complete control over the Configuration File and can make changes to it at any time from their own PC.

Each property can have any number of Configuration Files set up, one of which is downloaded and stored on FlexiDim™'s internal memory at any one time.

TCP Connectivity

FlexiDim™ has a TCP Connectivity option allowing you to connect the system directly to your home network. Where a wireless LAN is available, configuration can be carried out completely wire-free.

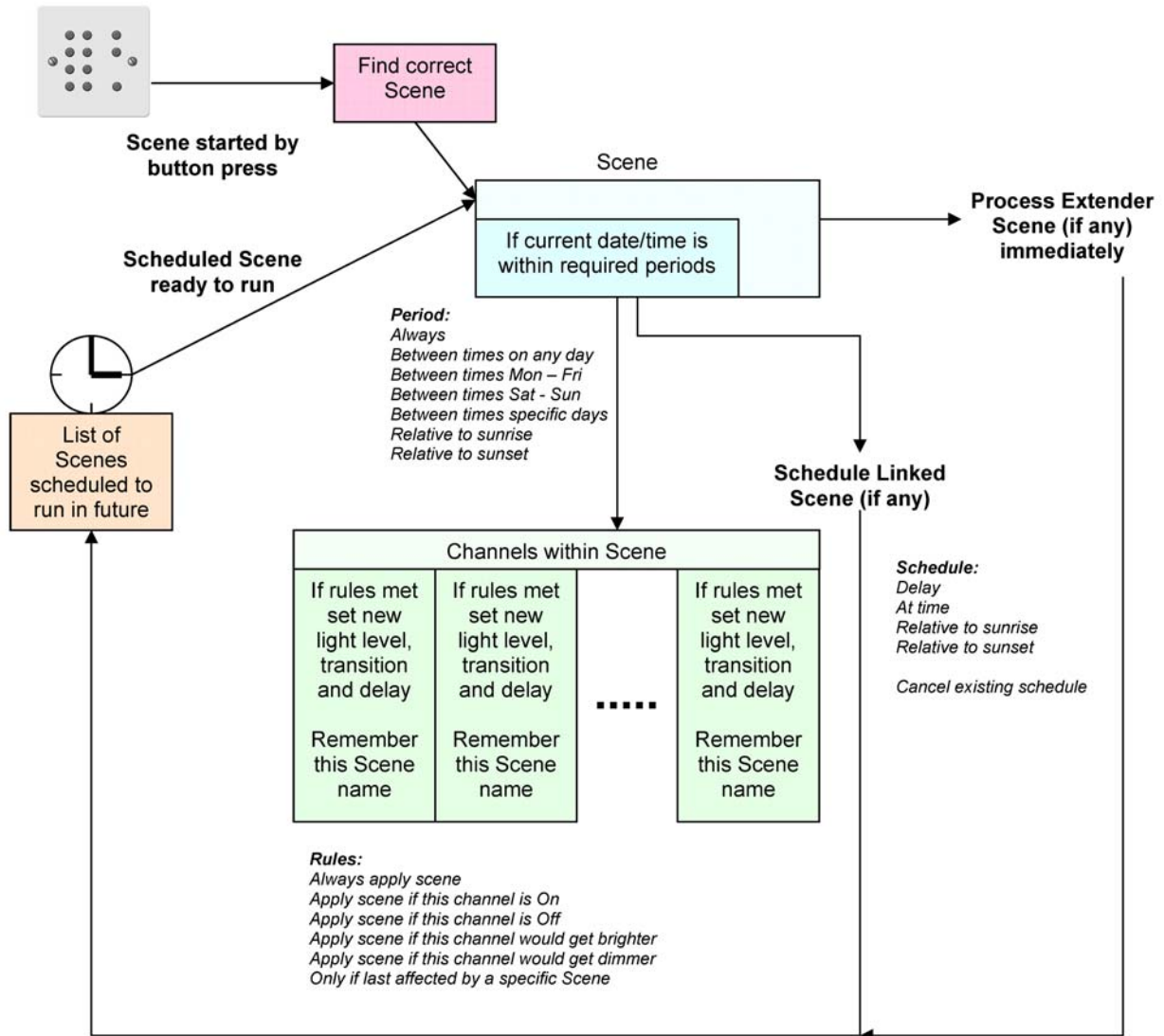
With a suitable broadband Internet connection, remote access is also possible.

FlexiDim™ User Guide

FlexiDim™ is also supplied with a comprehensive User Guide with step-by-step instructions for setting up and creating spectacular lighting effects.

FlexiDim™ Scene Processing

The following diagram shows an overview of the result of a button press on the FlexiDim™ system.



FlexiDim™ Scene Processing (contd.)

As the Scene processing flowchart demonstrates, pressing a button on a FlexiDim™ Switch Plate can do a lot more than turn a light (or number of lights) on or off.

The button press can also schedule lighting or related events to happen at a later time or as a result of a specific Scene running.

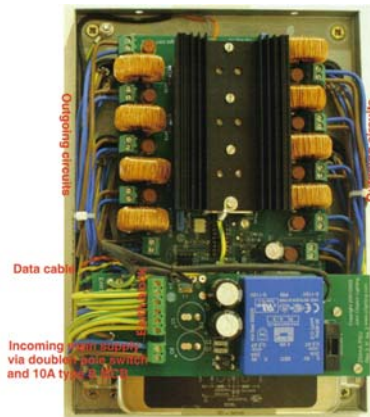
FlexiDim™ Scenes can include:

- Delayed Scenes or events
- Linked Scenes or events
- Extender Scenes
- Timed Scenes or Events (at a specific time of day or day of the week, after a time lapse, or relative to sunset and sunrise)
- Cancellation of future scheduled events

FlexiDim™ also features an auto-start function which means that lighting activity can run automatically without the need for a Switch Button press at all, even after a reset of the whole system.



FlexiDim™ Installation



- The FlexiDim™ installation process is straightforward and simple, and the components of the system have been designed with the installer in mind such that:
 - Connections for mains cabling are clearly marked, well spaced and accept up to 2.5 mm² cable.
 - Switch cabling connections are clearly marked on the circuit boards, and use plug connections wherever this assists ease of wiring.
 - The location of the Dimmer Modules is flexible; each one can be installed in the location most convenient for wiring to the light fittings that it controls.
 - The FlexiDim™ central control unit can also be located wherever is convenient for Switch wiring and not necessarily next to the Dimmer Modules.
 - Configuration is simple and straight forward, with no links or Switch settings to worry about (this is all taken care of by the software during Setup).
 - System setup (Commissioning) is quick and easy to understand and implement via a Microsoft Windows® interface on a home computer or laptop.

FlexiDim™ Wiring

A centralised dimmer needs slightly different wiring to a traditional lighting system. In many ways, this wiring is more logical and the ability to locate Dimmer Modules in the vicinity of the lights it controls, rather than in a central position, can save on cost, time and effort during installation.

Mains Wiring

Mains power is fed from the consumer unit to each Dimmer Module via an appropriate MCB (miniature circuit breaker). Each of the Lighting Circuits to be controlled is then cabled from the Dimmer Module to the light fittings.

Low Voltage Wiring

The remaining wiring in a FlexiDim™ system is low voltage, and Category 5 (unshielded) cable should be used.

System Power-up and Testing

FlexiDim™ incorporates simple and comprehensive installation tests which require no specialist equipment and can be run once the cabling has all been checked. These tests will verify the following:

- The power supplies are functioning,
- All Switches are working and the Switch Controller is receiving Switch data,
- The Scene Controller is successfully receiving data from the Switch Controller,
- The Scene Controller can control all Dimmer channels,
- All Dimmer Modules are working correctly and can receive data from the Scene Controller.

FlexiDim™ Dimensions and Environmental Limits

Case dimensions

- Switch Controller, Scene Controller, D600/2400 Dimmer:
260mm high x 190mm wide x 90mm deep
Wall mounted, cable access from rear.
- Switch Plates:
90mm x 90mm x 1.25mm
Fitted in standard UK single wall box (35mm deep).

Case clearances required at installation

- Switch Controller, Scene Controller:
Top & bottom 50mm
Sides 20mm
- D600/2400 Dimmer:
Top & bottom 50mm
Sides 50mm

Supply voltage

- Switch Controller, Scene Controller:
220-240V 50Hz AC, 30W
- D600/2400 Dimmer:
220-240V 50Hz AC, 6W (plus lighting load)

Environmental

- All components:
0°C to 40°C, 0-90% humidity non condensing

FlexiDim™ Installation Guide



FlexiDim™ is supplied with a comprehensive Installation Guide explaining the terminology and components of the system plus the installation process in full, with step-by-step instructions and wiring diagrams and photographs.

The system is designed to be installed by a qualified Electrician or other competent person working to current Wiring Regulations and standards.

In addition, JCL is happy to offer training and consultancy to installers, and also provides a telephone and online Support service (although this is rarely required).

FlexiDim™ Home Automation Gateway

The Home Automation Gateway extends the built-in network connectivity of FlexiDim™ to provide a programming interface that allows other software applications to interact with the FlexiDim™ Lighting Controller. Applications can connect to the system via wired or wireless networks or even via the Internet, to obtain information about or to control the lighting system.

The Home Automation Gateway provides:

- The ability to query configuration information, obtain the current value of lighting circuits and to invoke Scenes and Button presses.
- A monitor of system activity as it occurs
- Support for Multiple simultaneous connections
- Easier processing of real-time information
- Industry standard connectivity
- The opportunity to write new and custom applications using the published API
- Browser support for PDA and other handheld devices



In addition, various options are available to run third party applications, or FlexiDim™ applications such as the SMS Gateway, Activity Recorder and Smart Security module.

SMS Gateway



The FlexiDim™ SMS Gateway provides access to your lighting system via a mobile phone.

This means that you can send text messages to FlexiDim™ in order to invoke preset Scenes whilst you are absent from the property. For example, you may be delayed at work and wish to turn some lights on in the house for security reasons or for a guest arriving before you do.

If you wish, FlexiDim™ can subsequently text you back to let you know that your request has been fulfilled.

Activity Recorder

The FlexiDim™ Activity Recorder allows previous lighting activity to be played back during periods of prolonged absence in order to simulate activity around the property.

So, if you are going on holiday, you can play back a previously recorded period of lighting activity whilst you are away.

An editor is provided to manipulate recordings to create customised activity files for playback.

Smart Security



FlexiDim™'s Smart Security module will create intelligent and complex security sequences for the property based on certain key information such as which are the principal rooms in the property and the routes that interconnect these rooms.

For example, if the Living Room and Kitchen are principal rooms connected by the Hallway and the Downstairs cloakroom is also off the hallway and designated a secondary room, then Smart Security can construct a sequence of lighting activity based around these 3 rooms. The sequences may show the Living Room lights on much of the time, with the occasional change to the Hallway and Kitchen lighting to simulate somebody moving between these rooms.

More Information

For more information about the Home Automation Gateway and the API, please contact either JCL or your local FlexiDim™ distributor.



Energy Efficiency and Energy Saving

Energy Efficiency is all about getting the required amount of light for less electricity used, while energy saving can just mean using less electricity as a result of having less light. You could save a lot of electricity by sitting in the dark (and cold), but it's hardly an ideal solution!

Energy saving is quite easy, as we often have lights on when we don't need them, or have them brighter than they need to be. Turning lights off and dimming lights to a comfortable level both save energy. FlexiDim™ can help with both of these simple strategies by making dimming easy and convenient and by having presence detection in certain rooms or using timers, so that lights turn off automatically when the room is not in use.

Making lighting energy efficient involves choosing lights that produce more light for the same amount of electricity, or that use less electricity for the same amount of light emitted. Different types of lighting, such as traditional bulbs, halogen lamps, fluorescent and LED all generate light with different degrees of efficiency - but they do so in different ways and with different effects, which may not always be as pleasing to the eye in every application.

- You'll save more energy and do more for the environment by improving efficiency in a brightly lit area such as a kitchen, than replacing a few bulbs in table lamps. Bright lights that are on for long periods are also good candidates for savings. Attacking the lighting that is costing the most to operate yields the best savings.
- Balance energy saving against the effect that the lighting is designed to create. Remember, you can save a lot of energy with a single compact fluorescent lamp in the middle of the room but is it something you can live with? You have to decide on the extent of your savings.
- Split lighting circuits to add variety to the moods that you can create within a room. Never mix dimmable and non-dimmable lights on the same circuit.
- Buy good quality lamps from reputable manufacturers. Light output, efficiency, light quality and life vary enormously even between lamps that appear to be the same type.
- Before purchasing, try and see the lamp working (in a dim area) alongside the lamp you are replacing. LED based lamps, especially, have some very dubious claims made about equivalence with traditional lamps.

All lights produce a certain amount of light, measured in Lumens, and consume a certain amount of power, measured in Watts. Simply put, the efficiency is the number of Lumens of light produced per Watt of power consumed. The JCL website (www.jclighting.com) contains a table which gives a useful comparison of common lamp types.

Incorporating Energy Efficient Lighting

There are a number of practical disadvantages with the more efficient forms of lighting that have discouraged people from using them more widely. However, careful selection and application of energy efficient lighting in appropriate areas can make a significant saving in electricity without compromising the quality of your lighting scheme.

In planning an efficient lighting scheme, the first thing to remember is that we don't always need lights to be bright. Dimmed lights, *whatever the type*, use less energy. By using energy efficient lighting for the times when you need bright task lighting, yet still having dimmable halogen lights to produce a warm and pleasant low level lighting effect, you can achieve a variety of lighting moods to suit the occasion and still make a significant energy saving. Additionally (and perhaps obviously), do turn off lights when they are not needed, and in rooms where lights tend to get left on accidentally (like bathrooms and utility rooms), consider using motion sensors or timers to automatically turn the lights off when nobody's around.

Focus your efforts on using energy efficient lamps for larger circuits that are generally used at full brightness (the general downlights in a kitchen for example), and use dimmable halogen or LED for lower level moods to be created, typically for evening times when the main lights are not required.

Utility rooms are an obvious candidate for energy efficient fittings. Bathrooms can also have energy efficient lights on the main circuit and for mirrors, while dimmable lights provide gentle light levels for night time and for relaxing bath-times.

Note that LEDs are not especially energy efficient at the moment, but they don't use much energy as they are not very bright. As a result, they can be used for accent lighting and especially colour effects without worrying too much about their lack of actual efficiency.

It is not widely appreciated that fluorescent and compact fluorescent lights can be dimmed with the right equipment. However, even if you do go to the expense of making these light sources dimmable, their light remains the same colour as they dim, whereas conventional bulbs shift towards a more yellow light which we find pleasing. For this reason, they work best when used as indirect lighting – i.e. reflected off of a wall or ceiling rather than in direct application, such as downlights.

As a quick comparison, replacing 12 x 50W GU10 mains halogen downlights in a kitchen with 8 x 18W compact fluorescent downlights will produce far more light and reduce your electricity consumption by 76%, saving almost 1 unit of electricity for every 2 hours of use. Just that one regularly used circuit could save 750 units of electricity (£60 at current prices) over the course of the year, and result in 180Kg less CO2 emissions from a power station.



FlexiDim™ Compact

FlexiDim™ Compact from JCL is a conveniently 'scaled down' version of the popular FlexiDim™ lighting control system, and has been specifically designed for smaller lighting installations.

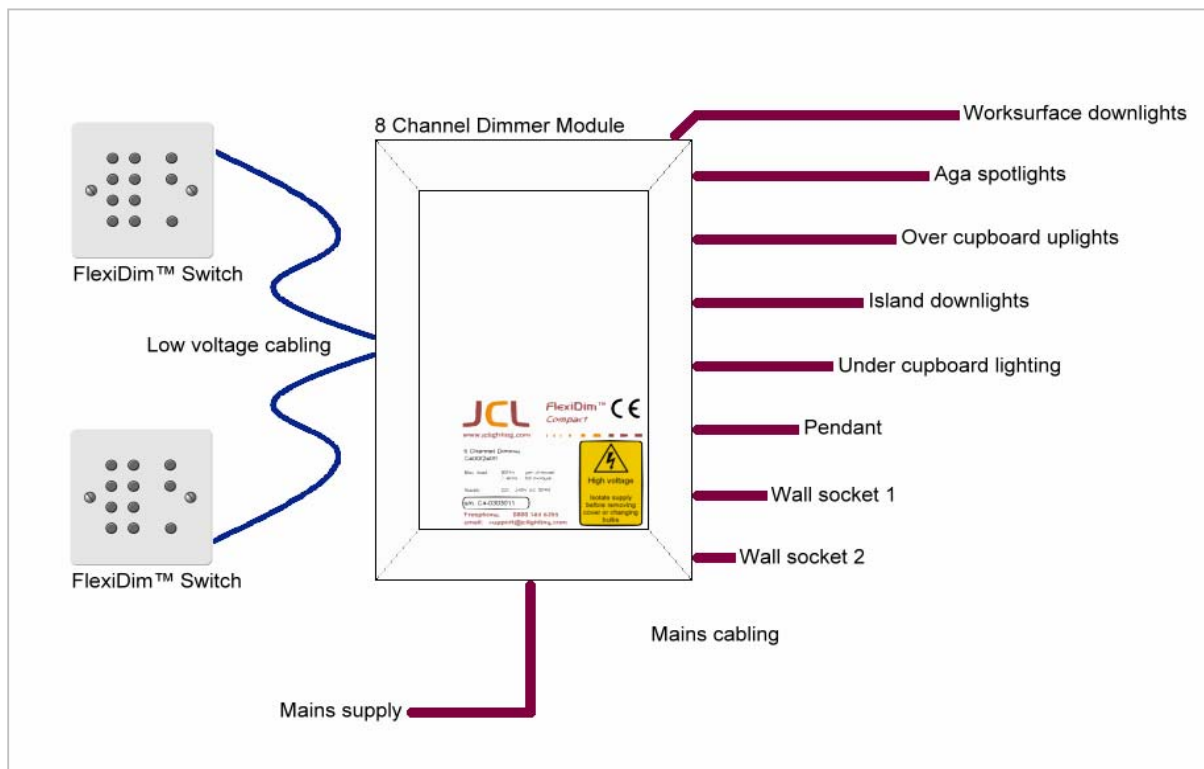
Controlling up to 8 lighting Channels (or circuits) from either one or two Switch Plates, FlexiDim™ Compact has proven very popular in principal rooms or in areas which are often refurbished or re-fitted in isolation, such as drawing rooms, kitchens, bathrooms, bedroom suites and also gardens.

FlexiDim™ Compact is programmable from its Switch Plates, allowing the brightness and the transition (or fade) time for each circuit in a Scene to be set individually.

Each Switch Plate can store up to 8 pre-set Scenes, and also features dim up, dim down and on/off buttons.

Switch Plate programming is fast and simple with default Scenes to get the User started, and simple copy operations included (from Scene Button to Scene Button or from Switch Plate to Switch Plate).

FlexiDim™ Compact System Diagram



Comparison between FlexiDim™ and FlexiDim™ Compact

	FlexiDim™ Compact	FlexiDim™
Maximum Switches	2	64
Maximum Channels	8	128
Maximum Scenes	8 per switch	1000
User Programming	Via Switch Plates	Via supplied PC program
Scene copying	Yes	Yes – via supplied PC program
Programmable dimming	Yes	Yes
Programmable fade times	Yes (8 different options)	Yes (Up to 4 hours)
Sequenced scenes	No	Yes
Sunrise/sunset calculator	No	Yes
Timed sequences	No	Yes
User definable periods	No	Yes
Real-time preview of Scenes during programming	Yes	Yes
Remote support	No	Yes
Dim conventional tungsten lamps	Yes	Yes
Dim low voltage halogen	Yes	Yes
Dim neon lights	Yes	Yes
Dim fluorescent lights	No – on/off control only	Yes
Dim LED	No – on/off control only	Yes
Control on/off appliances (e.g. extractor fan)	Yes	Yes
Remote control	No	Yes
Warranty	5 Years	5 Years



Overview of FlexiDim™ Wiring

