





SmartScan is a revolutionary wireless lighting management system that maximises energy savings and automates emergency lighting testing and record keeping.

The system allows users to monitor their energy performance data and complete operational information for all SmartScan standard and emergency luminaires.

Information is displayed on the SmartScan Website which can be accessed from anywhere using a computer, laptop, tablet or smartphone. The clear graphical user interface provides an overview of the whole site, through to the performance and operation of an individual luminaire.



Her Majesty Queen Elizabeth II
selected Thorlux Lighting as a winner
of the Queen's Award for Enterprise:
Innovation, for the SmartScan
lighting management system.



OVERVIEW

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INTRODUCTION

SMARTSCAN OVERVIEW



SMARTSCAN



SMARTSCAN INTERNAL

Integrated intelligent lighting management maximising energy savings for internal applications through movement detection and daylight sensing with convenient user control.



SMARTSCAN EXTERNAL

Integrated intelligent lighting management maximising energy savings for external applications through movement detection and daylight switching with timed override via the SmartScan Website.



SMARTSCAN RADAR

High frequency sensor technology built onto the LED light engine for applications where the luminaire aesthetics and impact rating are important factors. Maximising energy saving through presence detection, photocell control and user control timed override via the SmartScan Website.



SMARTSCAN EMERGENCY

Self-testing emergency luminaires with centralised, web-based testing and reporting options to ensure compliance with local standards.

BENEFITS



REDUCED INSTALLATION COSTS

The SmartScan Gateway and SmartScan luminaires simply require a 230V mains supply. So there is no need for data cables, additional power supplies or control modules.



EXCELLENT WIRELESS RELIABILITY

An operational frequency of 868MHz (922MHz in Australasia) provides excellent transmission distances and better penetration of signals throughout the built environment.



SIMPLE AND FAST COMMISSIONING

Using a single robust handheld infra-red programmer luminaires can be very quickly and easily commissioned, and all operational settings can be fine-tuned in the future if desired. All system and luminaire settings can also be programmed via the SmartScan Website, allowing simple changes via a user-friendly interface.



ENERGY CONSERVATION

SmartScan luminaires utilise the latest movement and daylight sensing technology to maximise energy savings whilst providing a uniform and comfortable working environment.



USER CONTROL

Utilising a range of scene setting controls, push to make switches or the SmartScan App users are able to tailor the environment to suit their specific needs or applications.



EMERGENCY LIGHTING LEGISLATION COMPLIANCE

SmartScan incorporates an emergency lighting system with centralised, web-based testing and reporting options. The system combines the best technologies of LED lighting with state-of-the-art web based feedback to provide full compliance with current legislation.



POWERFUL INFORMATION COLLECTION

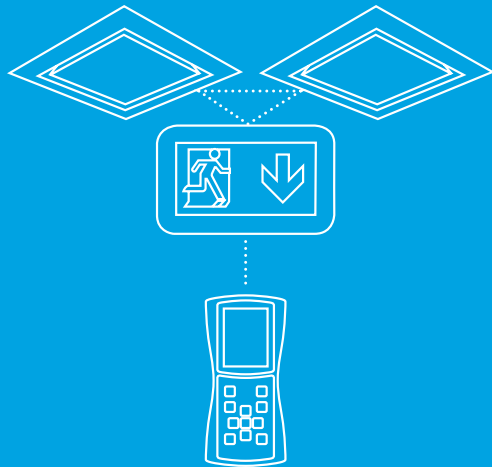
The SmartScan Gateway uses the mesh network to communicate with individual luminaires, controlling emergency light test timing and obtaining information on energy usage, luminaire status, occupancy profile and air quality. This information is transmitted to the SmartScan Website for viewing using tablets, smartphones, laptops and computers.



MADE IN THE UK

By manufacturing in the UK, Thorlux can meet urgent customer demands without the need to transport products by air to the UK, which would involve additional financial and environmental costs.

WHAT IS SMARTSCAN?



SmartScan is available in two platforms:

PLATFORM 1

Luminaires operate on a stand-alone basis:

SmartScan luminaires link wirelessly in groups for presence detection and scene setting. Energy performance data and operational status information can be retrieved using the SmartScan Programmer.

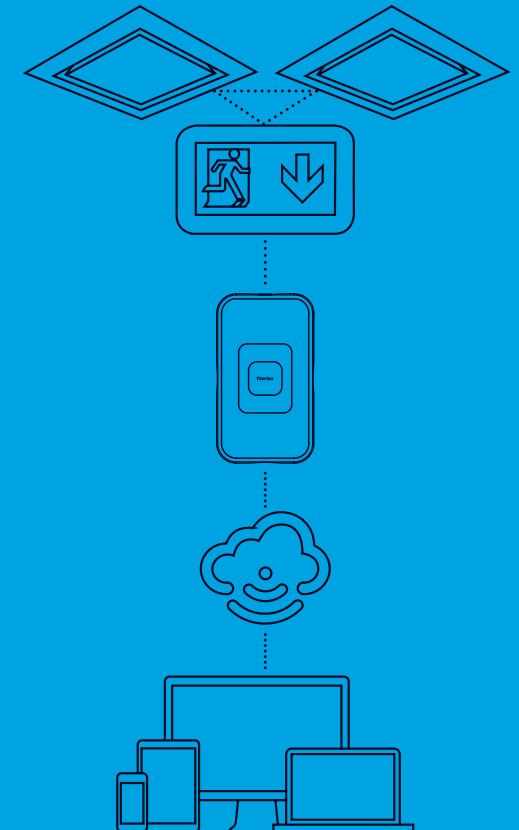
Emergency luminaires are self-test with the addition that operational status, and most recent emergency test information, can be retrieved using the SmartScan Programmer.

Projects initially installed to Platform 1 can easily be upgraded later to Platform 2 by installing a SmartScan Gateway.

PLATFORM 2

The luminaires are simply wirelessly linked into a Gateway which collects and transmits their energy performance data and complete operational information, for all SmartScan luminaires, to the SmartScan Website for viewing using tablets, smartphones, laptops and computers.

The SmartScan Gateway simply requires a 230V mains supply to operate as all communication is via a secure MQTT GSM connection.





SmartScan Internal, External and Radar

SmartScan introduces the latest wireless mesh network technology to provide communication signals between luminaires with sophisticated, trouble free transmissions.

At Platform 1 each luminaire can be individually programmed with a SmartScan Programmer during commissioning, and assigned to work exclusively within a particular building, or group created within that building. Energy performance data and operational status can be retrieved using the SmartScan Programmer.

SmartScan uses 868MHz (922MHz in Australasia) secure radio communication chosen for its excellent transmission distance and object penetration, especially useful within buildings. Each luminaire acts as a wireless node, repeating each command received on to the next luminaire, providing a robust system that will always find a communication path.

SmartScan Emergency

At Platform 1 all SmartScan emergency luminaires are stand-alone. Each luminaire will self-test and its operational status will be displayed by the status LED, the status information can be retrieved using the SmartScan Programmer. Manual tests can also be initiated at each luminaire using the SmartScan Programmer.

The user, is legally obliged to inspect each luminaire at prescribed intervals to monitor test status and manually log the results.



SmartScan
Programmer

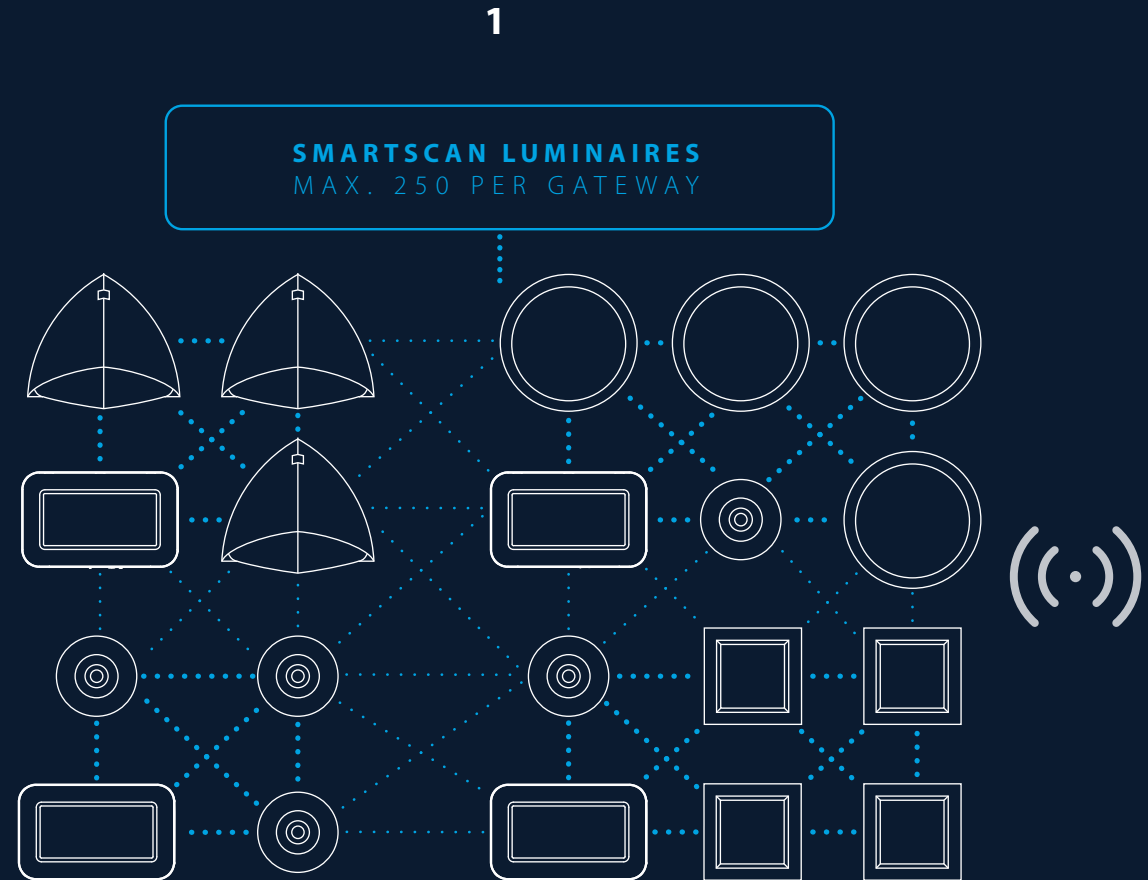


- 1 Compatible SmartScan Internal, SmartScan Radar, SmartScan External and SmartScan Emergency luminaires wirelessly communicate with each other.

- 2 The SmartScan Gateway transmits energy performance and status reports for both standard and emergency luminaires to the SmartScan web server.



- 3 Users employ their chosen device to view system information.





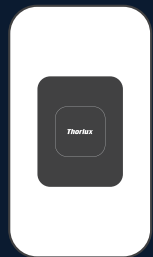
2

SMARTSCAN
GATEWAY

SMARTSCAN
WEB SERVERS

3

YOUR DEVICE

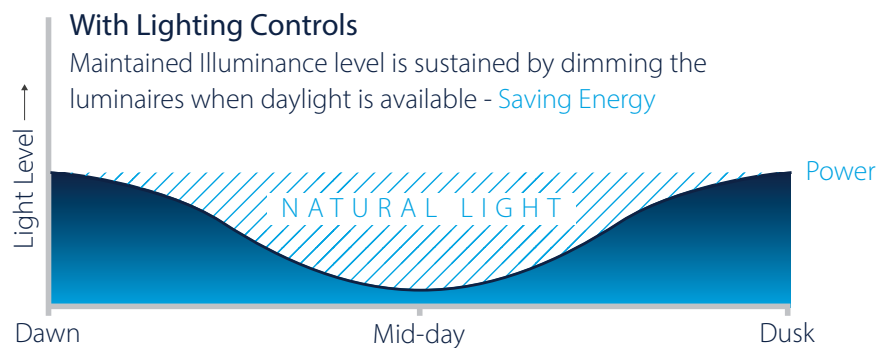
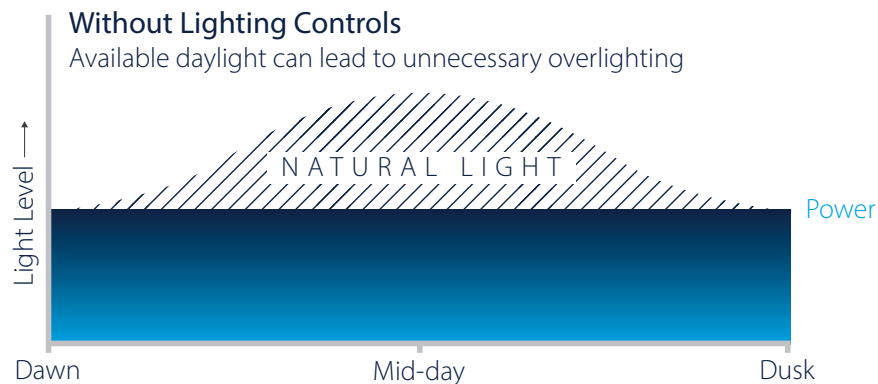




DAYLIGHT DIMMING



When daylight enters a room the SmartScan lighting management system will take this light into account and gradually dim the luminaires, saving energy whilst maintaining the required light level. As daylight increases, luminaire output decreases and luminaires may even switch off, minimising energy usage. The result is further savings in addition to those achieved by maintained illuminance (see page 14).



Individual control

A light sensor in every luminaire controls the output to suit local ambient conditions. To meet the needs of individual users, or the requirements for the space, each luminaire's factory default settings can be altered using the SmartScan Programmer. Each luminaire measures the ambient light in its immediate surroundings and adjusts its light output accordingly. This provides good uniformity across the working plane and maximises energy savings where the natural daylight ingress is varied across the space.

Bright-out feature

In the event of excess natural light for more than 10 minutes, the individual luminaire will turn off, saving further energy and prolonging LED life.



SmartScan Sensor in every luminaire

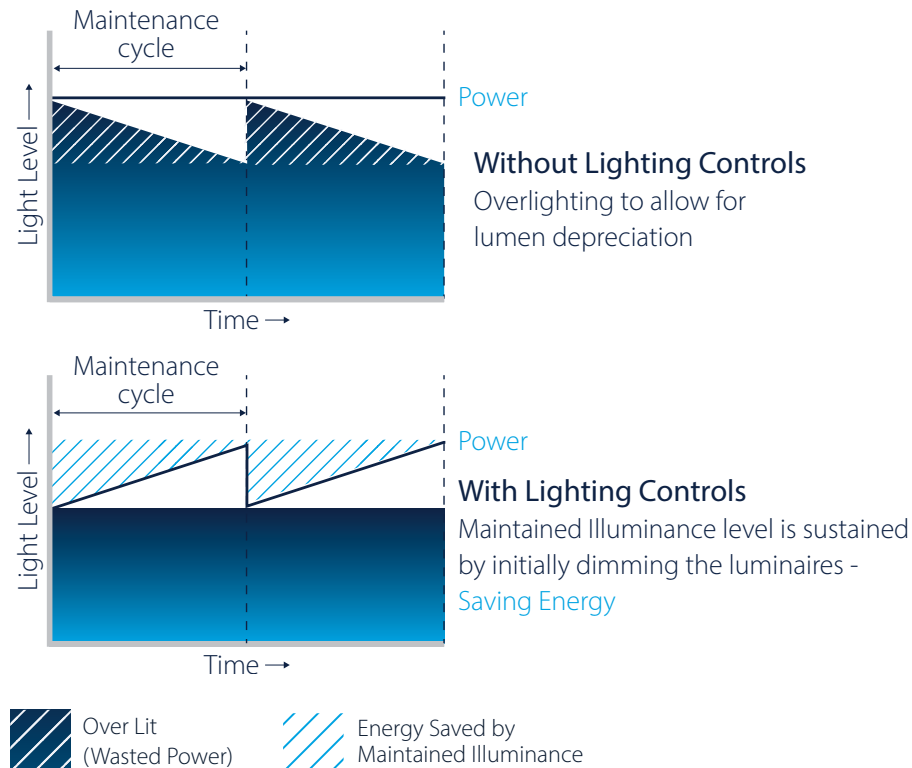
CONTROL

MAINTAINED ILLUMINANCE



The accumulation of dirt and lumen depreciation causes light loss and uncontrolled schemes are initially overlit to compensate. This results in excessive energy consumption over the maintenance cycle.

The SmartScan lighting management system allows luminaires to be dimmed to the required lighting level therefore avoiding over lighting and reducing energy consumption. This initial lighting level is sustained throughout the maintenance cycle by gradually increasing power, thereby maintaining the correct lumen output.



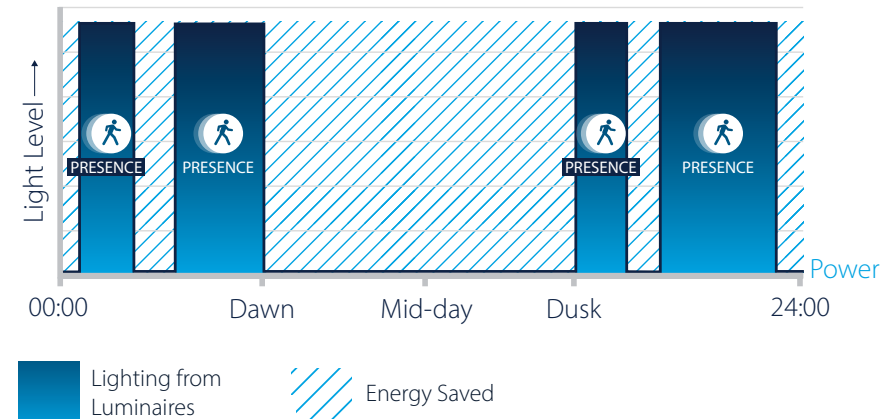
CONTROL

PHOTOCELL CONTROL



SmartScan External and SmartScan Radar incorporate an ambient light sensor which will enable at dusk and disable at dawn. When enabled, the luminaire will remain off until movement is detected.

Ambient light level switching can be adjusted using the SmartScan External Programmer.



Timed override control is also available via the SmartScan Website. See page 56 for more details.

CONTROL

PRESENCE DETECTION



SmartScan Sensors are used to detect movement to turn the luminaires on. After a predetermined time of no movement the luminaires will turn off, saving energy. The sensors can be programmed for absence mode whereby the luminaires are not initially turned on automatically by movement, but manually by the user with a switch; the sensor will then monitor movement to turn the luminaires off automatically after a pre-determined time.

SmartScan luminaires can be programmed to switch in groups, this feature is known as Motionline (see page 58 for more details). If any single luminaire detects movement all connected luminaires within the group will illuminate. This valuable feature is designed to eliminate the possibility of a user being isolated in a small pool of light, surrounded by intimidating darkness. Group switching control ensures that there will always be a well lit comfortable environment.

Each luminaire can be independently programmed with a time delay between 30 seconds and 10 hours, after which it can be set to switch off or dim to a programmed security lighting level for a further 30 seconds to 10 hours (or continuously). This ensures maximum possible energy saving whilst maintaining safe operation.

CONTROL

USER CONTROL



From switching and dimming to full scene control; a range of mains or battery powered SmartScan wall switches and remote handsets are available to allow manual control of the lighting.



SmartScan
Scene



SmartScan
Dim



SmartScan
Switch



SmartScan Scene Control

SmartScan Scene provides tailored switching and dimming of luminaires to suit the specific requirements of the space at that time. For example, if using a projector in a meeting room it may be desirable to turn off the luminaires closest to the screen for extra clarity; other luminaires within the space may then be set to a pre-set lighting level and to ignore any automatic settings.

By selecting any one of five pre-set scenes SmartScan Scene will instruct each luminaire to revert to a programmed light level established during commissioning. Each luminaire can be set to a different light output if required and to one of the following parameters for each of the available scenes:

Fixed lamp output from 0-100%.

Fixed scenes will provide a constant light output and will not adjust with ingress of daylight

Automatic illumination level 10-200%.

Automatic scenes will still dim with daylight but the light level can be set at a lower or higher level than its commissioned lighting level.

When a particular scene is no longer required another scene can be selected, or by pressing the ON (I) button the system will revert to automatic mode. Alternatively, the system reverts to automatic mode when presence is no longer detected and the time delay has elapsed.

In addition five pre-set dim levels are also available to dim the entire group as one, ranging from 10-100%.

The mains powered SmartScan Scene has a wireless connection that allows control of the luminaires using the Thorlux SmartScan App.



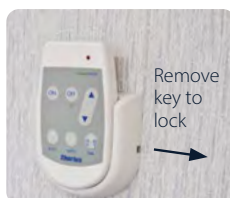


SmartScan Remote

The Thorlux SmartScan Remote can be used to control individual luminaires. It provides full control with on, off, dim and brighten features. The SmartScan Remote is supplied with a unique, robust wall mounting bracket. A locking key kit ECO 9724 is available if required.



Insert key
to unlock

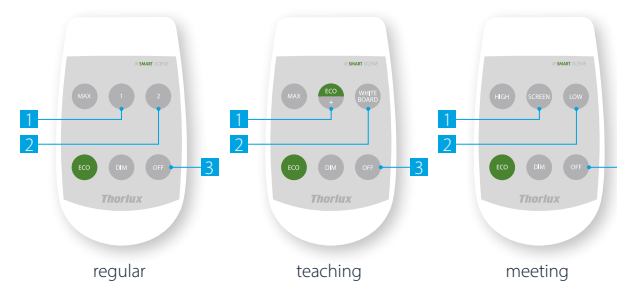


Remove
key to
lock



SmartScan Scene Remote

The Thorlux SmartScan Scene Remote can be used to switch groups of luminaires, dim individual luminaires or recall two programmed scenes.



1 Scene 1 2 Scene 2 3 Scene 3



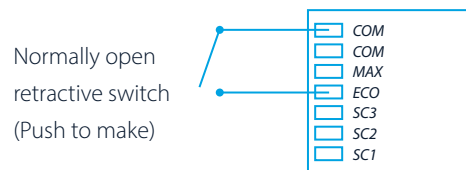
SmartScan Wireless Switch Module

The SmartScan Wireless Switch Module is designed to work with conventional push-to-make wall switches and transmits wireless commands, for example on/off and scenes, to a single receiving group of luminaires. Multiple switch modules can be located in proximity of the group to suit the user's requirements for switching locations. Long life battery operation means there is no mains wiring required, providing flexibility for switch locations and significantly reducing installation time and complexity.

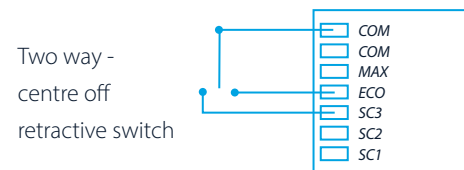
Switches (not supplied) are wired into the SmartScan Wireless Switch Module which is located within the switch's mounting box (min 35mm deep).

Typical Applications

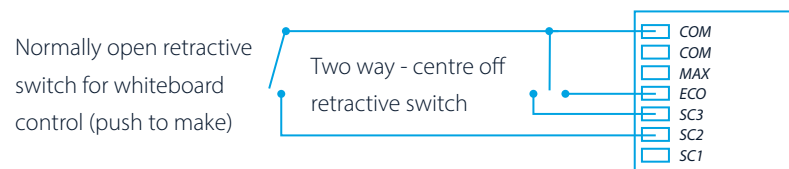
Absence Detection/Dimming



On/Off/Dimming Control



Classroom On/Off/Dimming Control with Whiteboard Scene



The following control options are available:

Eco: Energy saving mode/activation for absence detection or press and hold to dim

Max: 100% lamp output

Scene 1: User defined lamp or light level

Scene 2: User defined lamp or light level

Scene 3: User defined lamp or light level

See page 16 for details on scene setting parameters

Note: Lithium battery lifetime is expected to provide 10 years use for normal operation (30,000 operations). Configuration is set by using the SmartScan Programmer.

CONTROL

SECONDARY LUMINAIRES



Feature and accent lighting often consists of low power, directional luminaires that are used to highlight features or break up a space. These luminaires are generally not suited to integral controls such as SmartScan.

Non SmartScan luminaires can be integrated into the SmartScan system in two ways:

1. Use of a SmartScan Hub to control non-dimming luminaires such as accent lighting

In many cases the majority of the area will be lit using SmartScan luminaires with integral automatic controls, having the ability to turn off when the space is vacated. Installing the feature luminaires as 'secondary' units (non-intelligent) that switch off and on in line with the SmartScan luminaires (but will not dim), removes the need for switches and ensures a fully automatic lighting installation.

Suitable luminaires

Luminaires must be fitted with non-dimming control gear (suffix Thorlux luminaire catalogue number with "L").

NOTE: Status monitoring of connected luminaires is not available when through the SmartScan Hub.

NOTE: Not suitable for use with SmartScan emergency luminaires. Use Firefly or similar dedicated SmartScan luminaires.

2. Use of a SmartScan Stand-alone Sensor to control up to 10 DALI luminaires

In areas where it may not be possible to have a SmartScan Sensor inside every luminaire a SmartScan Stand-alone Sensor is required. In this instance the group reacts in unison to the commands of the sensor, switching and dimming as one. Compatible luminaires need to be supplied with DALI control gear, suffix 'A'

SmartScan Hub

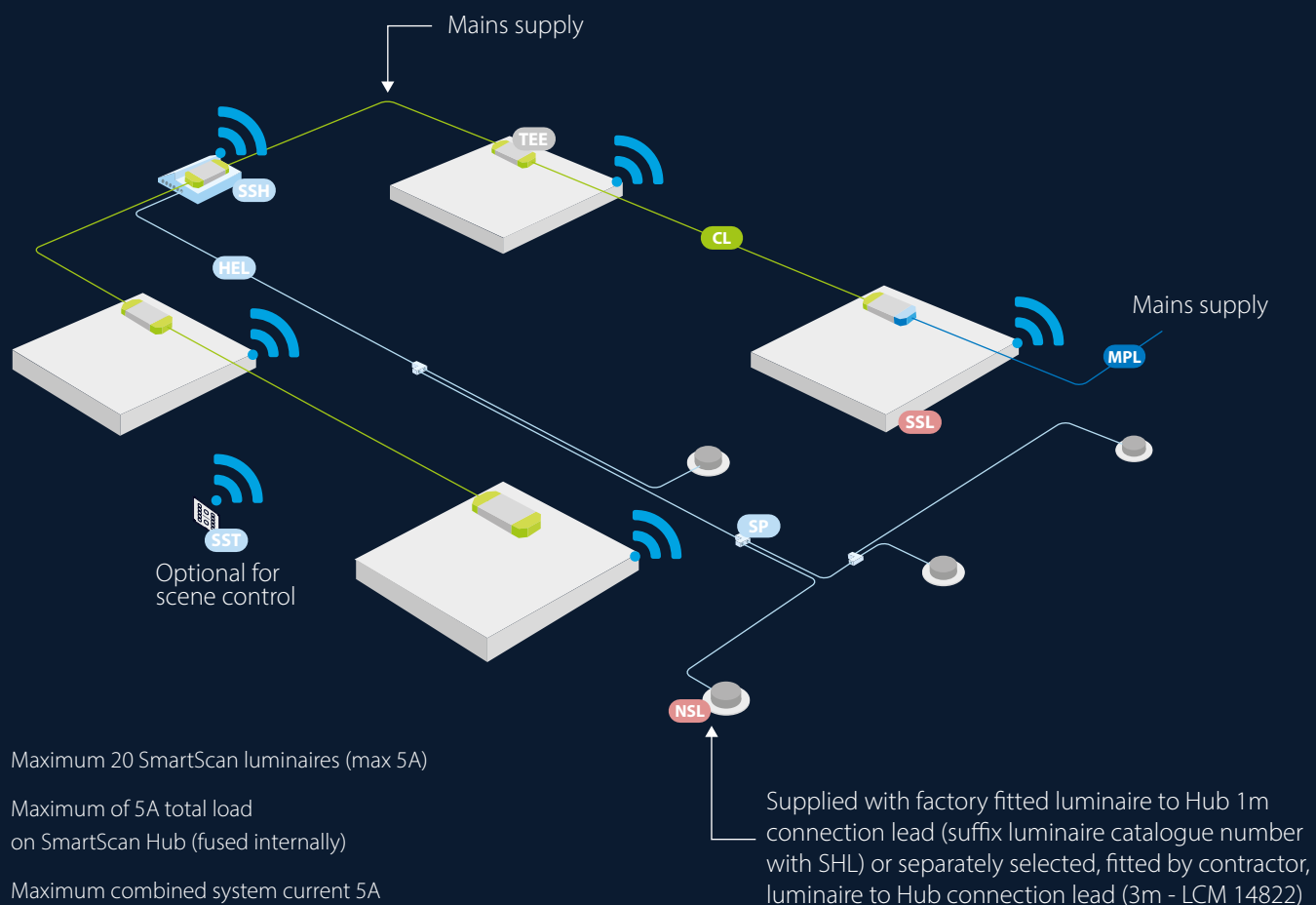


SmartScan Stand-alone Sensor



Modular wiring application with SmartScan Hub

The SmartScan Hub will switch the luminaires on and off based on Motionline signals.
Time delay and scene responses are set on the Hub.



- SSH** SmartScan Hub (SS 20089)
- SST** SmartScan Touch
(Battery Powered - SS 20212)
(Mains Powered - SS 20213)
- SP** Circuit splitter (LCM 14928)
- HEL** Hub extension lead (LCM 14823)
- MPL** 3-pole mains plug with 3-core input lead (3m - LCM 18273)
- CL** 1.5mm² (CSA) Mains/control lead (3-pole)
(3m - LCM 18270)
(4m - LCM 18271)
(6m - LCM 18272)
- SSL** SmartScan luminaire
- NSL** Non-SmartScan (Secondary) luminaire
- TEE** TEE connector (3-pole) - fitted to back of all SmartScan luminaires
- Mains 3-core (LCM)
- Mains switched 3-core, maximum distance 100m

SECONDARY LUMINAIRES



Wiring application with recessed or surface SmartScan Stand-alone Sensor

The SmartScan Sensor will turn the luminaires on and off based on presence detection and dim according to daylight level/maintained illuminance. It will provide wireless connectivity for group control.

SmartScan Platform 2 Energy Reporting

The Stand-alone Sensor is fully compatible with SmartScan Platform 2 energy monitoring. The website will report the combined total circuit parameters of all the luminaires controlled by the Stand-alone Sensor.

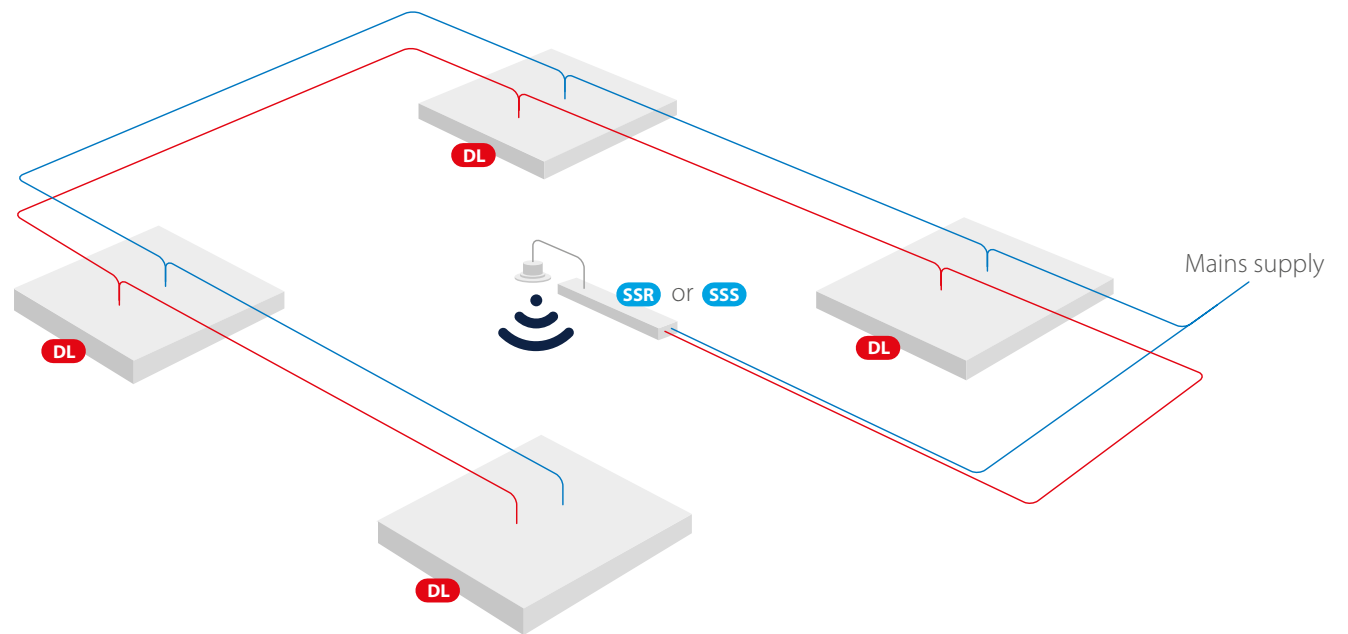
Suitable Luminaires

Luminaires must be fitted with DALI control gear (suffix Thorlux luminaire catalogue number with "A").

A maximum of 10 DALI drivers can be connected to each Stand-alone Sensor (some luminaires may have more than one driver).

NOTE: Status monitoring of connected luminaires is not available when using the SmartScan Stand-alone sensor.

NOTE: Not suitable for use with SmartScan emergency luminaires. Use Firefly or similar dedicated SmartScan luminaires.



SSR SmartScan Stand-alone Sensor - Recessed (SS 18650)

or

SSS SmartScan Stand-alone Sensor - Surface (SS 18651)

DL DALI luminaire

— Mains 3-core

— DALI 2-core





EMERGENCY

SELF-TEST EMERGENCY



Manual testing of emergency luminaires can be a long and arduous process, which can be open to error. Legally, as required by BS EN 50172, each luminaire must complete a function test once a month and a full three-hour duration test once a year.

Performing this process manually requires the engineer to be present to ensure that the luminaire stays lit for the duration of the tests, a time consuming and costly process, especially on large sites.

Self-testing luminaires remove this need and, in its simplest form, the basic requirement is to observe the status indicator to see if the luminaire has failed a test.

BS EN 62034:2012 is the European Standard for Automatic Test Systems for Battery Powered Emergency Escape Lighting. One of the main requirements is that the device must be self-monitoring and that it checks all tests are being performed at specified intervals.



From: **SmartScan**

Subject: **System Status Report**



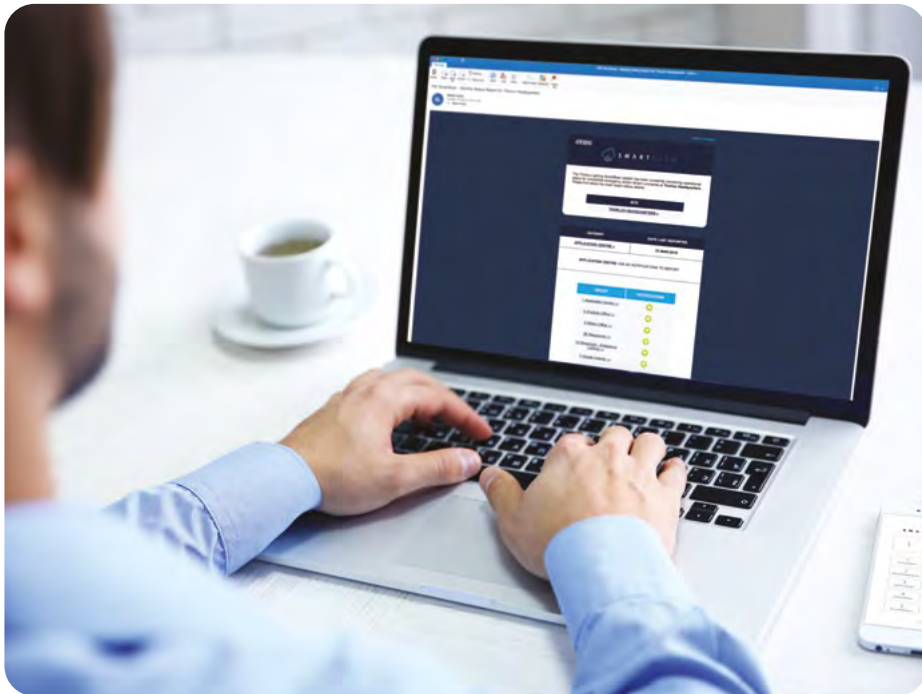
EMERGENCY

TEST SCHEDULING



SmartScan incorporates an emergency lighting system with centralised, web-based testing and reporting options.

The system combines the best technologies of LED lighting with state-of-the-art web-based feedback.



PLATFORM 1

Test Schedule Compliance

A Thorlux SmartScan emergency luminaire will automatically test itself to the specified schedule, and constantly monitor its own performance. Any fault is displayed on the status indicator LED, eliminating the need to perform diagnostic routines.

The full-duration commissioning test is automatically performed after 24 hours of uninterrupted connection to the mains supply. Thereafter it will randomise its time counter (to avoid all luminaires testing on the same date and time), and will automatically carry out scheduled testing which comprises of twelve tests each year - eleven monthly short function tests and one full duration test.

Testing costs are significantly reduced as the user simply monitors the status indicator of each emergency luminaire instead of having to perform manual testing routines. If a fault is indicated, it needs to be rectified, and to comply with standards, the unit must be re-tested to ensure correct operation and that the fault indication has cleared.

The SmartScan Programmer can be used to communicate with the emergency luminaire to manually initiate tests, and to obtain status and diagnostic information.

Test Record Keeping

The status of test results should be manually recorded, and included in a log book.



PLATFORM 2

Test Schedule Compliance

A Thorlux SmartScan Platform 2 system offers the major benefit that tests are scheduled using the SmartScan Website, thus avoiding any issue of randomised testing occurring at inopportune times. The duration test month can be selected to suit maintenance work schedules.

Any fault is displayed both on the status indicator LED, and on the website where diagnostic details of the fault are displayed.

The SmartScan Programmer is an essential tool for the maintenance engineer because it can be used to communicate with an individual emergency luminaire to manually initiate tests, and to obtain status and diagnostic information.

If a fault is indicated, it needs to be rectified, and to comply with standards, the unit must be re-tested to ensure correct operation and that the fault indication has cleared. Tests can be performed using the SmartScan Programmer.

Test Record Keeping

All status reports are stored electronically on the SmartScan web server. Email notification of status is transmitted to authorised users on a monthly basis.

Servicing

If a luminaire fails a test, rectification of the fault should be completed as soon as possible. A full duration test must be performed (after giving the batteries time to fully charge) to prove that the fault has been cleared.



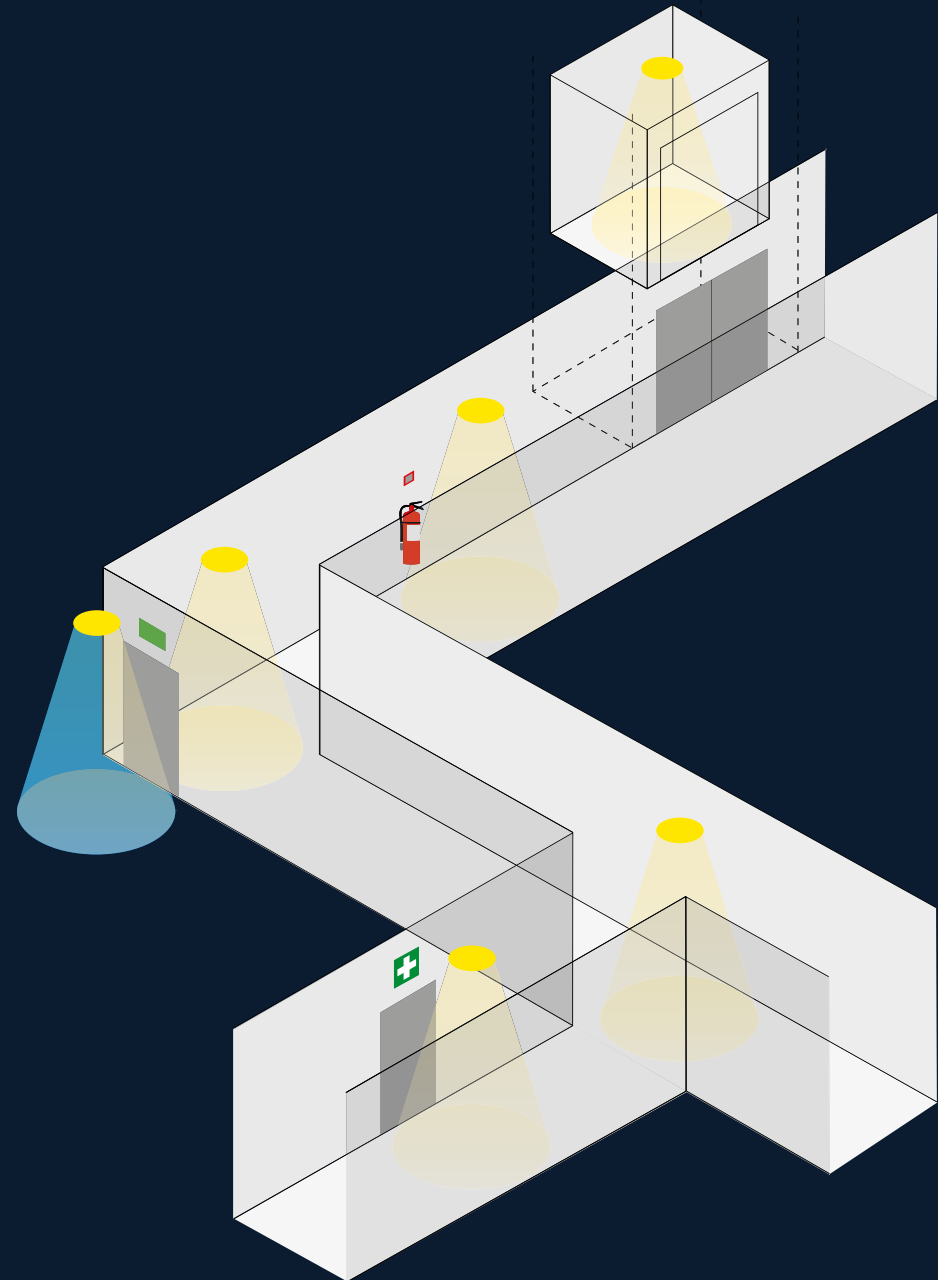
EMERGENCY

EMERGENCY LIGHTING DESIGN



The purpose of emergency lighting is to provide light in the event of a mains or local power supply failure.

- The emergency lighting design must take into account the following:
- Escape route signs
- Stairs so that each flight receives direct light
- Changes in floor level
- Changes of escape route direction
- Corridor intersections
- First aid posts
- Fire alarm call points or pieces of fire fighting equipment
- Outside the final exit door and to a place of safety
- Moving stairways and walkways
- Toilet facilities exceeding 8m² or any multiple closet facility without borrowed light
- Toilet facilities for disabled use
- Motor generator, control and plant rooms
- All other areas as deemed by the Risk Assessment
- Manual release controls for electronically locked doors
- Escape equipment for disabled people
- Refuges and call points, including disabled toilet call positions





Consultation and Risk Assessment

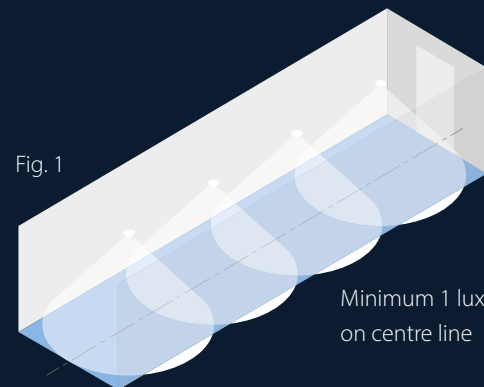
The Regulatory Reform Order (Fire Safety) states that consultation between the owner/developer and/or occupier of a premises, the architect, the lighting engineer, the contractor and enforcing authorities should be arranged at a very early stage to define how relevant standards shall be applied and to begin the development and management of the risk assessment process.

The responsible person is required to carry out risk assessments to identify the risks to any persons entering the premises and to take measures on the basis of the risk assessments to safeguard building occupants. These measures include the provision and maintenance of emergency lighting. Emergency lighting design proposals must take into account requisite risk assessments.



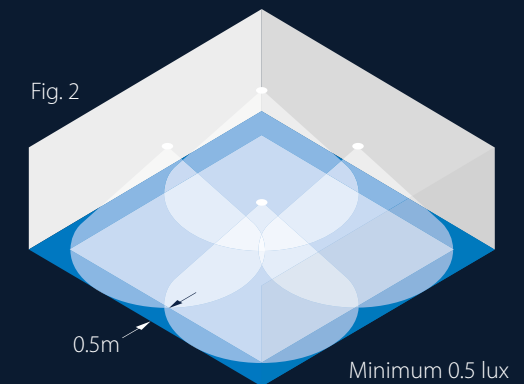
Escape Route Lighting

For escape routes up to 2m width the horizontal illumination level on the floor along the centre line of the escape route shall not be less than 1 lux and a central band consisting of not less than half of the width of the route shall be illuminated to a minimum of 50% of that value. Substantially wider escape routes can be treated as a number of 2m wide strips or be provided with open area (anti-panic) lighting (see Fig. 1).



Open Area (anti-panic) Lighting

Areas which are 60m² or greater should be equipped with anti-panic emergency lighting. The horizontal illumination at floor level shall not be less than 0.5 lux anywhere within the core area. This core area excludes a border of 0.5m from its perimeter. The ratio of maximum to minimum illuminance shall not be greater than 40:1 (see Fig. 2).



High Risk Task Area Lighting

In areas considered to be of high risk, the maintained illuminance shall not be less than 10% of the required illumination level for the task being performed. It should not be less than 15 lux and must be free from stroboscopic effects.

LEGISLATION COMPLIANCE



Why test and maintain emergency lighting?

The Regulatory Reform Order (Fire Safety) places legal responsibility, with private culpability, on either the building owner or employer to provide and maintain an emergency lighting system. This includes the regular testing, inspection and record keeping of the system as defined in BS 5266-1:2016 and BS EN 50172:2004.

Building owners or employers have a duty to ensure the safety of their employees. Failure to do so can result in a fine, or in the very worst case, imprisonment.



Legislation, Standards and Guidance Documents include:

- Regulatory Reform (Fire Safety) Order 2005
- Building Regulations Approved Document B
- BS EN 1838:2013
- BS EN 50172:2004
- BS 5266-1:2016
- BS EN 62034:2012
- BS 5499-4:2013
- BS EN ISO 7010:2020+A3:2022
- SLL Lighting Guide 12 (LG12)

Test Requirements

BS EN 50172:2004 specifies the following routine test schedule for self-contained emergency luminaires:

Commissioning

Full 3 hour test.

Monthly

Each self-contained emergency luminaire must be energised from its battery for a short duration to simulate mains failure. The lamp should illuminate from the battery.

Annual

Each self-contained emergency luminaire must be energised from its battery for the full duration (normally three hours).





SMARTSCAN

MONITORING

WEBSITE FEATURES



- Energy performance reports.
- Emergency lighting status information and test history.
- SmartScan luminaire status information.
- Management of emergency lighting testing dates/times.
- Automated emergency, energy and occupancy reports.
- Management of external lighting switching times.
- Provides the ability to change luminaire parameters and control regime.
- Occupancy profiling information (space utilisation).
- Air quality information.
- Management of ColourActive regime.
- Interactive drawings for simplified access to information.
- Fully documented API to allow interface with 3rd party cloud-based systems.
- Fully interactive archive of data, providing compliance with emergency lighting record keeping requirements.

User Friendly

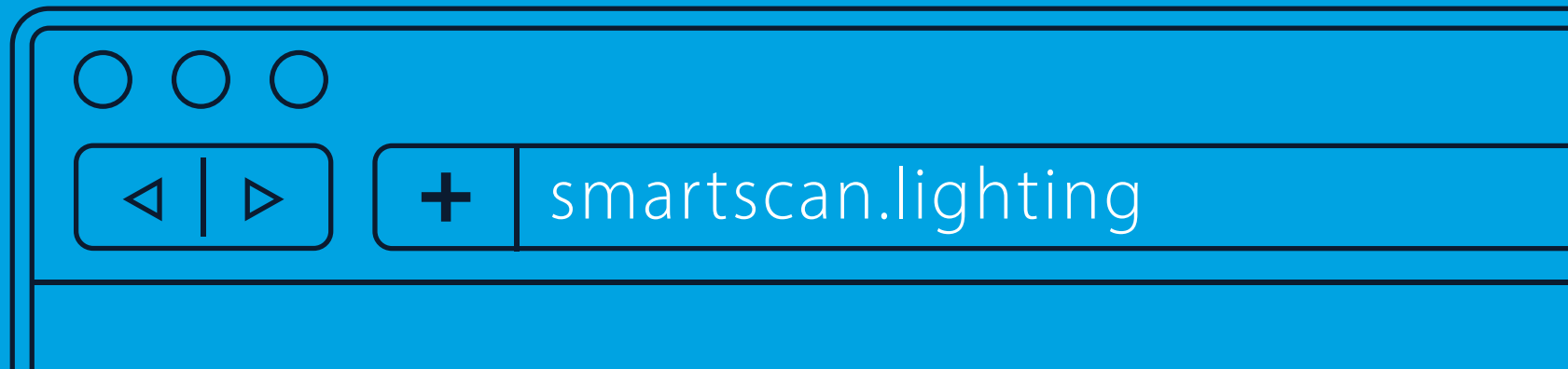
The system is accessed using a web browser, there is no need for a specific app or dedicated software.

Remote Access

Records can be accessed remotely with a username and password.

Off-site Storage

Energy performance data, emergency lighting testing records, occupancy profiles, air quality data, 'as fitted' drawings, Interactive drawings and commissioning certificates are stored remotely on the web server.



MONITORING

FULL LUMINAIRE STATUS MONITORING



The SmartScan Gateway provides daily uploads of the system status to the website.

Secure access allows the user to view full luminaire status of the whole installation, individual groups of luminaires or individual control gear items within a luminaire.

The website provides an easy to read visual reference highlighting the following:

SmartScan Luminaires

- Mains control gear functionality
- Light source functionality
- Thermal performance (the luminaire is operating within correct temperature limits)
- Average energy used by the luminaire
- Total hours powered and operating/on

SmartScan Emergency Luminaires

- Lamp status in emergency operation
- Number of hours that a lamp has operated from the battery
- Integral battery is connected and charging
- Result of the last monthly function test and the date of the next scheduled test
- Result of the last annual duration test and the date of the next scheduled test
- Emergency lighting testing schedules



A full history of test reports is also available to view.



SmartScan
Status Reporting



SmartScan Emergency
Status Reporting

MONITORING

ENERGY USAGE MONITORING



SmartScan luminaires keep a record of energy usage, at Platform 1 basic usage can be downloaded with the SmartScan programmer, at Platform 2 the SmartScan Website displays energy information for individual luminaires, rooms, or as a total for all connected devices.

The main screen for the site provides a graphical overview of energy use for all luminaires as a percentage when compared with a fixed output installation operating 24 hours a day 7 days a week. The user can choose to change this to kWh, energy cost or CO₂ emissions, with an option to change the analysis period from the last week, to the last month or the last year.

It is possible to analyse this information further, as a group is selected this graph will update accordingly, with the ability to monitor individual luminaires if desired.





User Friendly

The system is accessed using a web browser, there is no need for a specific app or piece of software.

Energy Data Download

The export feature facilitates download of the basic energy data for any specified period of time as a CSV file. This can be imported into a spreadsheet for analysis.

Off-site Storage

Energy performance data, luminaire status, emergency lighting testing records, "as fitted" drawings, commissioning certificates and all the essential emergency lighting documentation is stored securely on the web server. Only authorised users have access to this data.



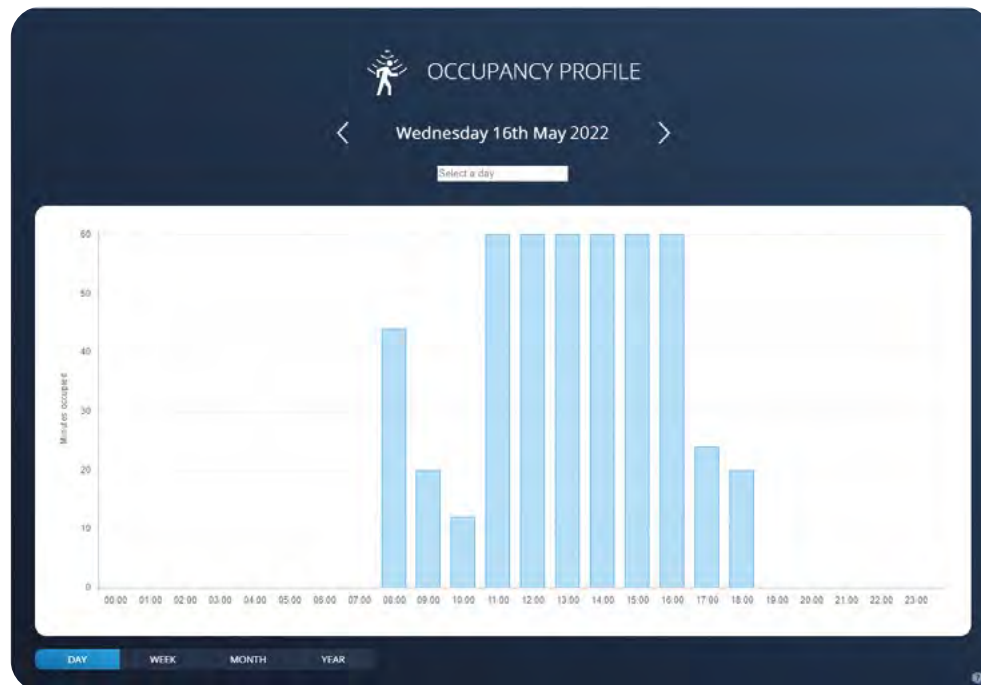
MONITORING

OCCUPANCY PROFILING



Buildings are an expensive resource, both to construct and to maintain, and it is therefore essential that they are used efficiently.

Consequently, building and facilities managers need to understand clearly how their rooms and spaces are being utilised. This may be, for example, to monitor the usage of teaching spaces, meeting rooms, or the frequency of access to aisles in a large warehouse.



Occupancy Profiling

SmartScan has the ability to provide occupancy profiling information. The data collected from the SmartScan Sensor, incorporated into the luminaire, can be used to monitor room occupancy even when the lamp is turned off.

Each day occupancy data is gathered by the SmartScan Gateway, from every SmartScan Sensor, and included in the Gateway's status upload to the SmartScan Website.

Authorised website users can view the occupancy profiles on an annual, monthly, weekly or daily basis. This data is available for groups or individual luminaires.

Key Features

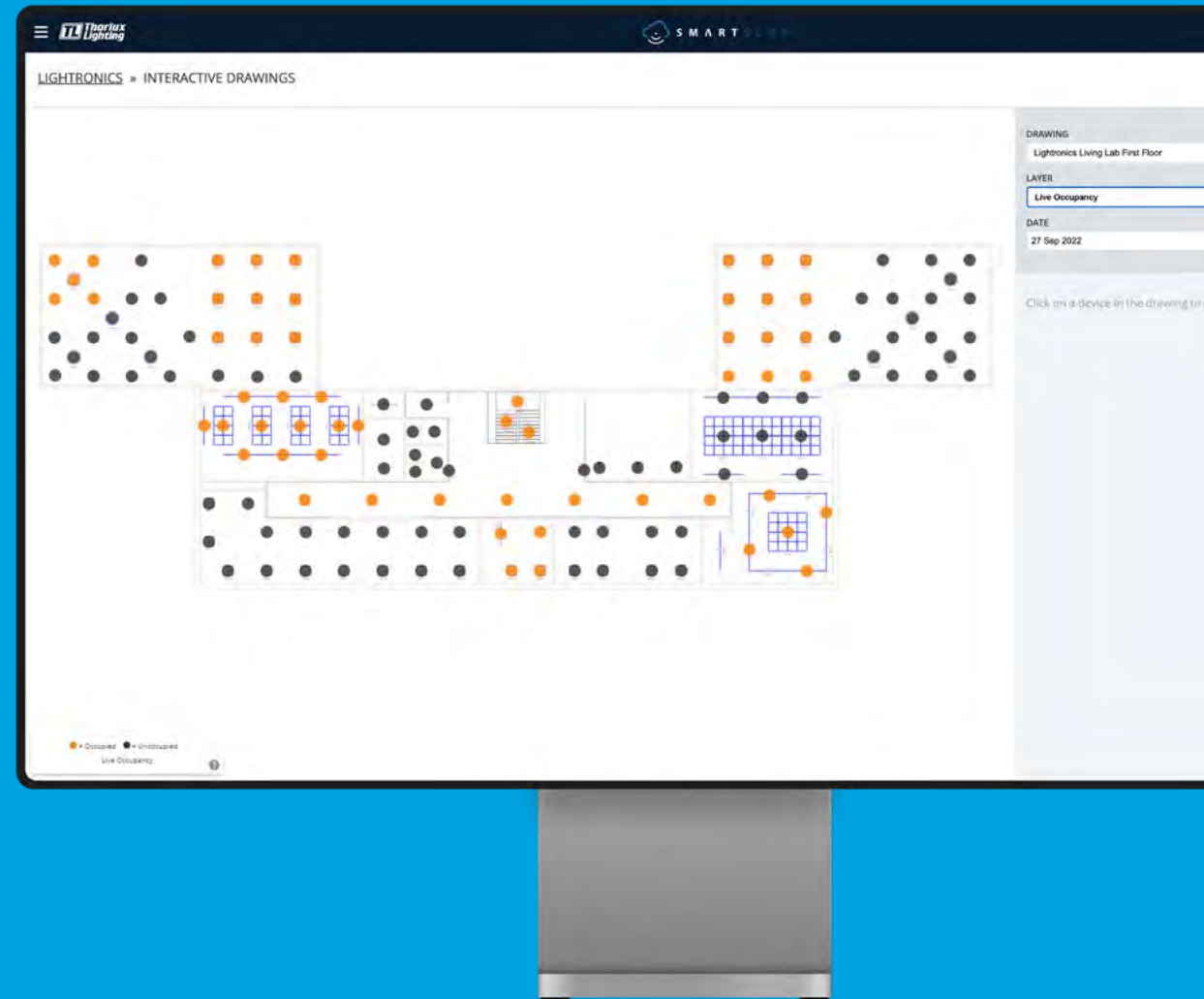
- No additional equipment/software is required
- Occupancy profiles are stored off-site and can be viewed at any time by an authorised user
- Reports are available for all groups and individual luminaires



LIVE

Live Occupancy Profiling

In certain applications live occupancy profiling may be required. For example, a room coordinator may need to know whether the board, conference or meeting rooms are occupied or vacant. SmartScan Live Profiling allows any number of groups of luminaires to be monitored in real time, with live occupancy status displayed via the interactive drawing on the SmartScan Website. The system monitors occupancy signals on the SmartScan mesh network and updates the status display instantly.



MONITORING

INTERACTIVE DRAWINGS



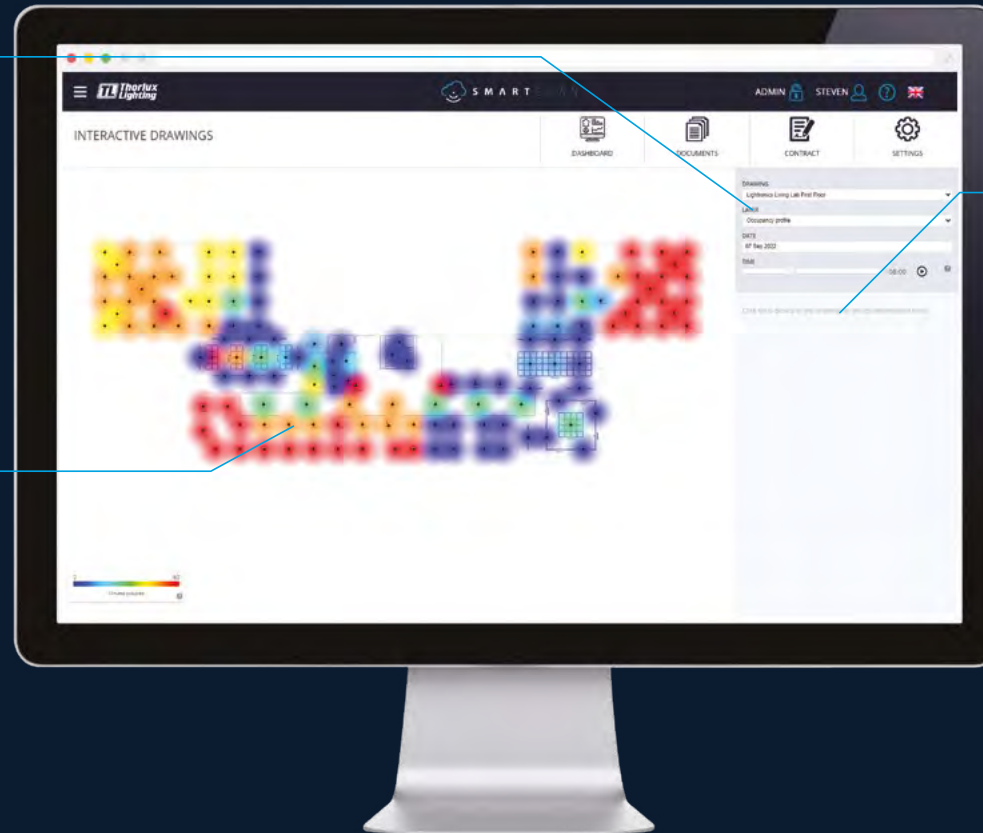
SmartScan Interactive Drawings provide a simple and effective method of viewing system information.

Navigation

Each dataset is shown as a layer allowing the user to zoom in or out as needed. The user can look at data for the whole building, or focus attention on a single room or individual luminaire.

Occupancy Profile

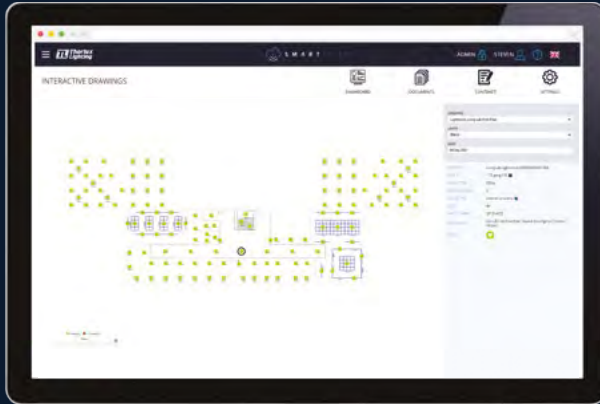
The occupancy profile for each sensor is displayed by a range of colours from blue (no occupancy) through to red (occupied continuously throughout the selected hour).



Information Table

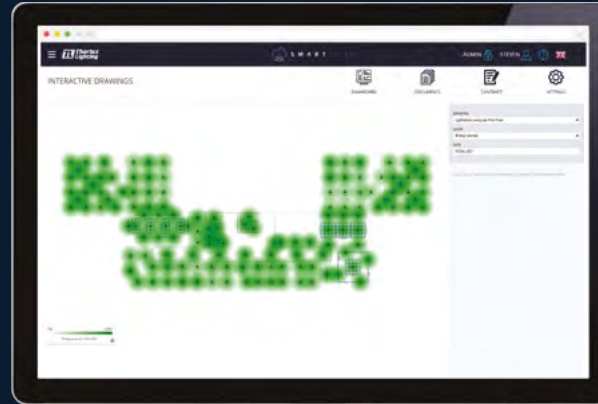
If a single luminaire is selected, an information table is displayed with the data for that luminaire.

The user can select a date, then using the time slider can see how the usage pattern or performance changes through the day.



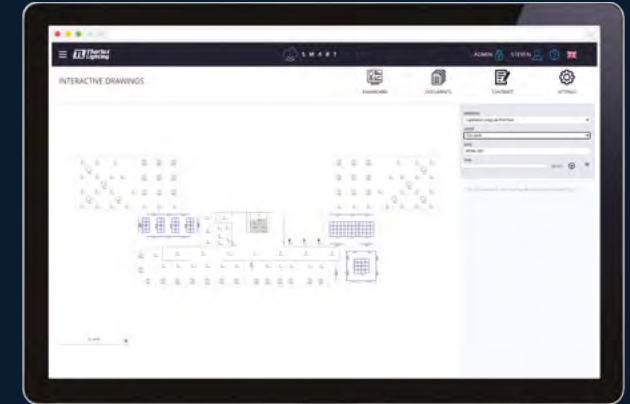
Status

If a luminaire requires attention the exact position is highlighted on the interactive drawing. The information table will show the status of electronic components within the luminaire.



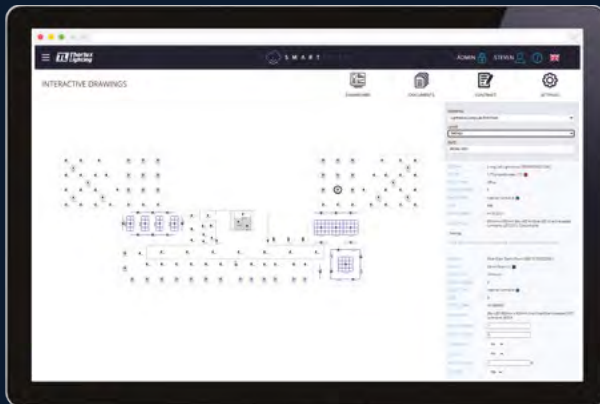
Energy Savings

Daily energy savings are shown by a graduated indicator – the darker the green, the greater the energy saving that day. If a single luminaire is selected, the information table shows the energy performance for that luminaire.



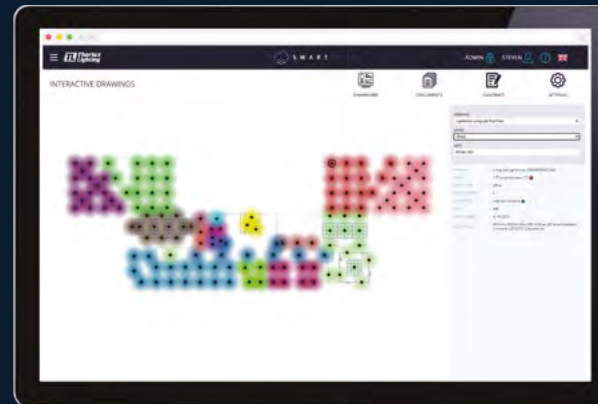
Air Quality Sensing

Temperature, humidity and CO₂ levels are displayed with colour-coded shading. The information table displays the exact values for each sensor at any given time.



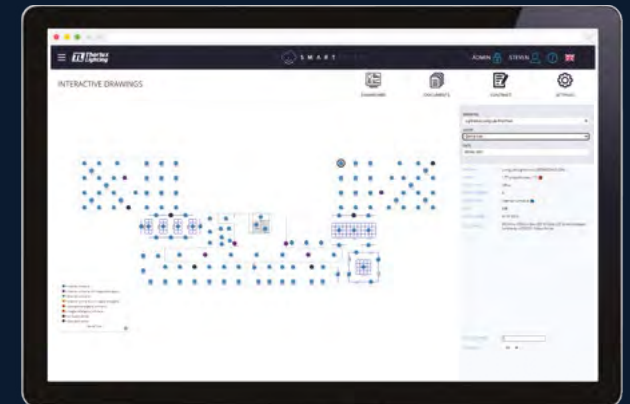
Settings

Luminaire control settings are displayed and can be adjusted by the user, allowing simple, visual re-configuration of the system.



Groups

Simple visual display of current zoned switching arrangements, useful when re-configuring the use of space.



Device Types

Interactive display of luminaires by device type, simplifying the identification of emergency luminaires within the installations.



SMARTSCAN

WELL-BEING



COLOURACTIVE LUMINAIRES WITH SMARTSCAN CONTROL



Colour Temperature Control

Thorlux ColourActive high performance LED luminaires incorporate dual populated PCBs where LEDs with two different colour temperatures (3000K and 6500K) are combined.

The Thorlux designed and manufactured technology utilises twin lighting circuits within each luminaire to vary the output to produce colour temperatures of either 3000K, 6500K or any value in between.

High quality medium power LEDs, placed on a circuit board with integral heat sinking, provide a highly efficient solution.

Advanced Controls

SmartScan wireless mesh network technology provides signals to control the ColourActive luminaires to provide both manual and automatic control of colour temperature.

The ColourActive Gateway communicates with the luminaires throughout the day, providing automatic, seamless transitions between colour temperatures.



METHODS OF CONTROL



Option 1

Time Schedule Control

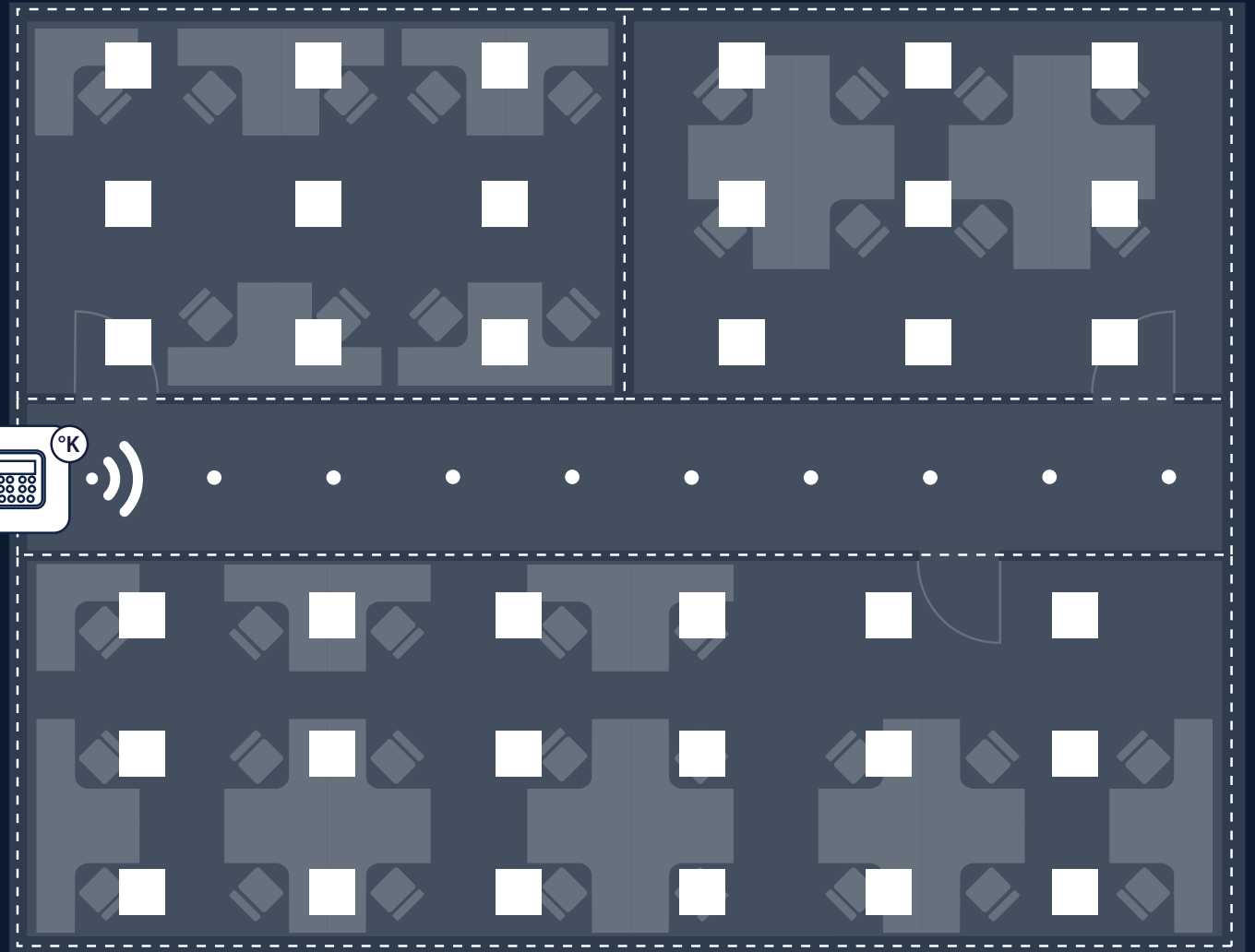
A ColourActive Gateway wirelessly provides building wide colour temperature control of ColourActive luminaires. The time schedule is configured via the Thorlux SmartScan Website.

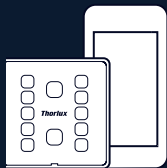


Ideal for whole buildings.

All the benefits of the Thorlux SmartScan system, plus the addition of colour temperature control.

Additional SmartScan Gateways can also be fitted for luminaire energy monitoring and status feedback.





Option 2

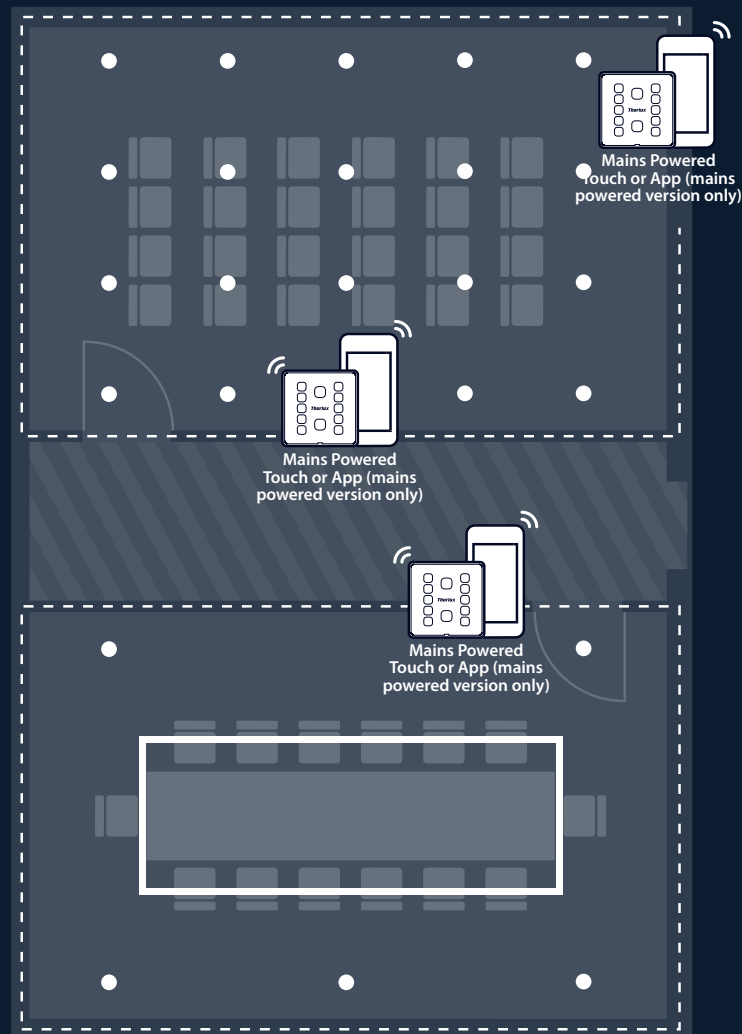
Manual Control

Ideal for small offices, meeting and conference rooms.

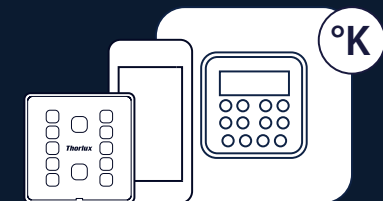
Colour temperatures are set by the user with the ColourActive app.

Additional SmartScan Scene plates can also be fitted for individual group scene setting and control.

Multiple SmartScan Scene plates can be fitted in each area for added convenience.



Options 1 and 2 Combined Automatic and Manual Controls



Automatic and manual controls can be combined to provide maximum flexibility and convenience.

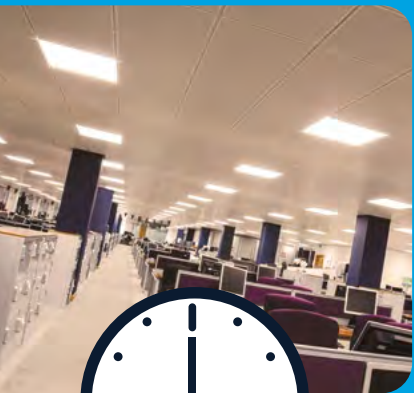
Users can override the automatic building wide settings to suit their individual needs. The system reverts to automatic mode once the area has been vacated.

HOW DOES COLOURACTIVE AUTOMATIC CONTROL WORK?



The daily ColourActive cycle is configured via the SmartScan Website. Preset regimes follow the natural daylight rhythm, or specific settings can be set and tailored as required. This gives the user complete freedom to set a colour temperature regime that suits the building's usage pattern.

Settings are transferred to the ColourActive Gateway which broadcasts colour temperature settings to all luminaires every few minutes, ensuring seamlessly smooth transitions throughout the day.



06:00 - 3000K



09:00 - 4000K



12:00 - 6500K



15:00 - 5000K



18:00 - 3000K

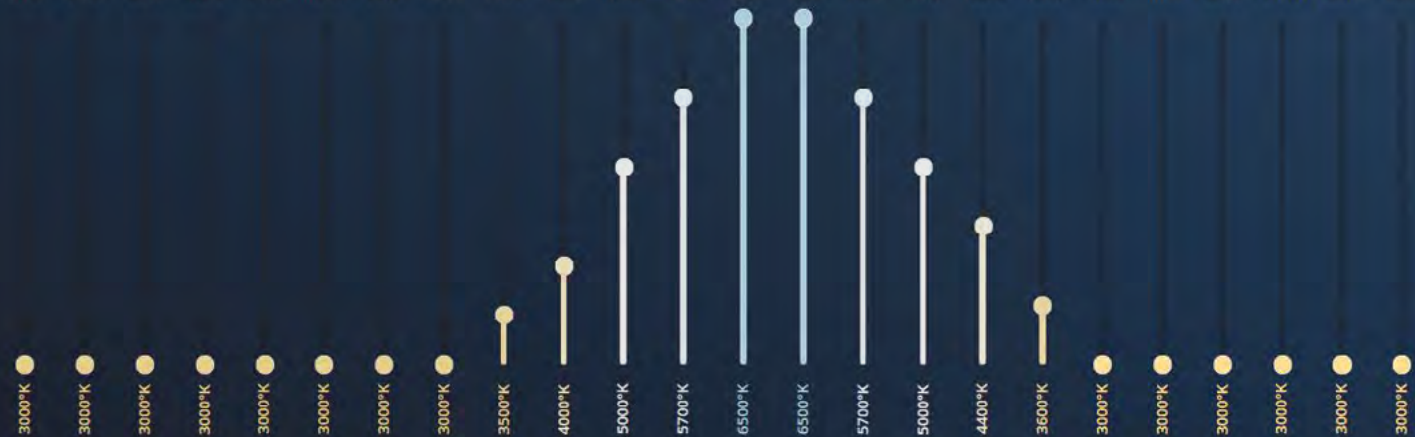


OFFICES



COLOUR ACTIVE SETTINGS

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00



SAVE

AIR QUALITY SENSING



Research shows that air quality has an impact on health, and could potentially affect an individual's well-being, comfort and performance in the workplace. Poor air quality may lead to symptoms such as headaches, fatigue and eye irritation.

'THINK SMART ABOUT AIR QUALITY'



SmartScan Platform 2 Air Quality Recording

Each day air quality data is gathered by the SmartScan Gateway from every SmartScan Air Quality Sensor and included in the Gateway's status upload to the SmartScan Website.

Authorised users can then view the air quality profiles as an annual, monthly, weekly or daily report. This data is available for groups and/or individual sensors.

Key features

- No additional software is required
- Air quality records are stored off-site and can be viewed at any time by an authorised user



°C Temperature

Temperature greatly influences an individual's comfort level, affecting mood, performance and work-place productivity. Comfortable temperature ranges will depend upon the usage of the space.

% Humidity

Humidity needs to be within a range of values for the environment to be comfortable and to promote good health. If the humidity levels are too low, individuals may experience dryness and irritation to the skin, eyes, throat and nasal passages. Conversely, high humidity levels promote the growth and accumulation of mould spores, bacteria and dust mites, potentially leading to allergies and respiratory inflammation. Humidity is also linked to temperature, so that at lower temperatures, higher humidity levels can be tolerated.

CO₂ Carbon dioxide

CO₂ levels over 1000ppm create a "stuffy" atmosphere, causing individuals to feel lethargic and sleepy, lowering concentration levels and reducing work-place performance. The cause of CO₂ build-up is often inadequate ventilation and/or air circulation within a space. Increasing the ventilation will bring in fresh air and dispel accumulations of CO₂.

SmartScan Air Quality Sensor

The SmartScan Air Quality Sensor monitors three key parameters: Temperature, Relative Humidity and CO₂.

Coloured LED indicators within the sensor provide live status information for each parameter, enabling users to take remedial action if necessary. Summary air quality data is included in the daily status upload to the SmartScan web server. The Air Quality Sensor has three settings, based on the usage of the space, that can be selected as part of the commissioning process: inactive, semi-active or active.

Air Quality Sensor Settings

Setting	Temperature	Humidity	CO ₂
 In-active Typical Applications: Care Homes, Offices	● >26°C	● >70%	● >1000 ppm
	● 24 -26°C	● 51-70%	● 800-1000 ppm
	● 20 -24°C	● 25-50%	● <800 ppm
	● <20°C	● 20-25%	
		● <20%	
 Semi-Active Typical Applications: Warehouses, Factories, Retail	● >25°C	● >70%	● >1000 ppm
	● 23 -25°C	● 51-70%	● 800-1000 ppm
	● 20 -23°C	● 25-50%	● <800 ppm
	● <20°C	● 20-25%	
		● <20%	
 Active Typical Applications: Sports Halls	● >21°C	● >70%	● >1000 ppm
	● 19 -21°C	● 61-70%	● 800-1000 ppm
	● 16 -19°C	● 25-60%	● <800 ppm
	● <16°C	● 20-25%	
		● <20%	



SMARTSCAN
SYSTEM

INSTALLATION



Installation is simple. Each SmartScan luminaire simply requires a permanent 230V mains supply.

- No data cables.
- No routers.
- No LAN network.
- No mains switches.
- No emergency feed key switches.
- No connection to the IT network, eliminating risk.



ALL OUR SYSTEMS
USE 230V



SYSTEM

LIGHTING CABLE MANAGEMENT



Recessed SmartScan luminaires are manufactured with fitted 'plug and play' TEE connectors to accept factory made and tested interlink leads.

This approach, often referred to as modular wiring, provides a fast, error free installation and overall lower total system costs. A range of additional lighting control components can easily be added to the system to customise the installation to the user's requirements.



- Permanent Live (L)
- 
- Neutral

SmartScan - 3-pole

Specification

- Thorlux UK designed and manufactured
- LS0H - low smoke zero halogen cables
- Leads can be plugged together to extend wiring
- Future flexibility - plug and play
- Twin latch design - strong strain relief
- Constructed from flame retardant nylon
- Compliance with new standard BS EN 61535:2013



Twin latch design -
strong strain relief

Constructed from
flame retardant nylon

LSOH - low smoke
zero halogen cables



LIGHTING CABLE MANAGEMENT



TYPICAL MODULAR WIRING EXAMPLE

Fixed wiring feed

- Recommended load - 5 amps maximum
- 20 luminaires
- Recommended fuse - MCB 10A TYPE C

A

B

C

LUMINAIRE

LUMINAIRE

LUMINAIRE

D

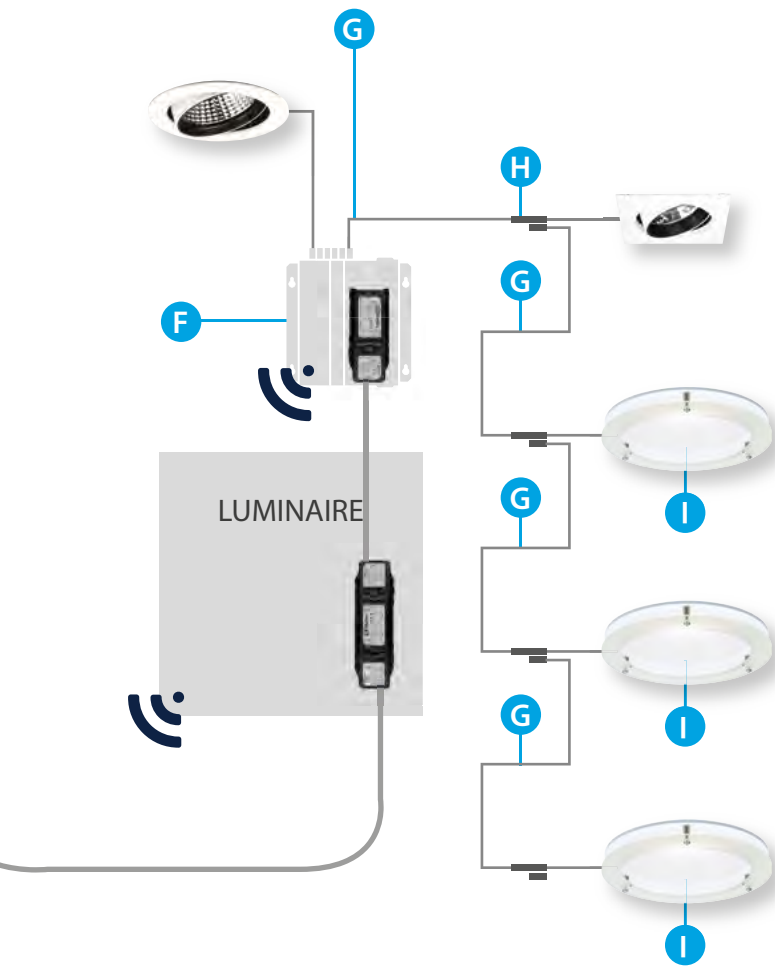
Separate mains feed

E

J

K

For full details of wiring systems and lighting control products visit www.thorlux.com/controls



Range

REF	DESCRIPTION	CAT. No.	APPROX. kg
A	Starter lead - 3-pole mains plug with 3-core input cable stripped at one end 1.5mm ² - 3m	LCM 18273	0.39
B	Factory fitted 3-pole TEE connector (suffix Thorlux luminaire catalogue number with TEE3 , standard factory fitted to recessed SmartScan luminaires)		
C	Connection lead - 3-pole connectors with 3-core cable 1.5mm ² - 3m	LCM 18270	0.61
C	Connection lead - 3-pole connectors with 3-core cable 1.5mm ² - 4m	LCM 18271	0.78
C	Connection lead - 3-pole connectors with 3-core cable 1.5mm ² - 6m	LCM 18272	0.95
D	Firefly with 3-pole TEE connector - Area	WFF 17490TEE3	0.6
D	Firefly with 3-pole TEE connector - Corridor	WFF 17491TEE3	0.6
D	Firefly with 3-pole TEE connector - Standard	WFF 17492TEE3	0.6
E	SmartScan Scene - Battery Powered	SS 20212	0.08
E	SmartScan Scene - Mains Powered	SS 20213	0.08
E	SmartScan Switch - Battery Powered	SS 20320	0.08
E	SmartScan Switch - Mains Powered	SS 20321	0.08
E	SmartScan Dim - Battery Powered	SS 20322	0.08
E	SmartScan Dim - Mains Powered	SS 20323	0.08
F	SmartScan Hub (Modular Wiring Type)	SS20089TEE3	1.1
F	SmartScan Hub (Conventional Wiring Type)	SS20089	1.1
G	Hub extension lead - 3-pole connectors with 3-core cable 1.5mm ² - 3m	LCM 14823	0.16
H	Circuit splitter	LCM 14928	0.02
I	Luminaire factory fitted with a 1m Smart Hub lead and circuit splitter (suffix Thorlux luminaire catalogue number with SHL)		
J	SmartScan Remote	LCM 13479B	0.08
K	SmartScan Scene Remote - Regular	LCM 14816	0.08
K	SmartScan Scene Remote - Teaching	LCM 14817	0.08
K	SmartScan Scene Remote - Meeting	LCM 14818	0.08
MISC	SmartScan Programmer	SS 20211	0.44

LIGHTING TIME CONTROL



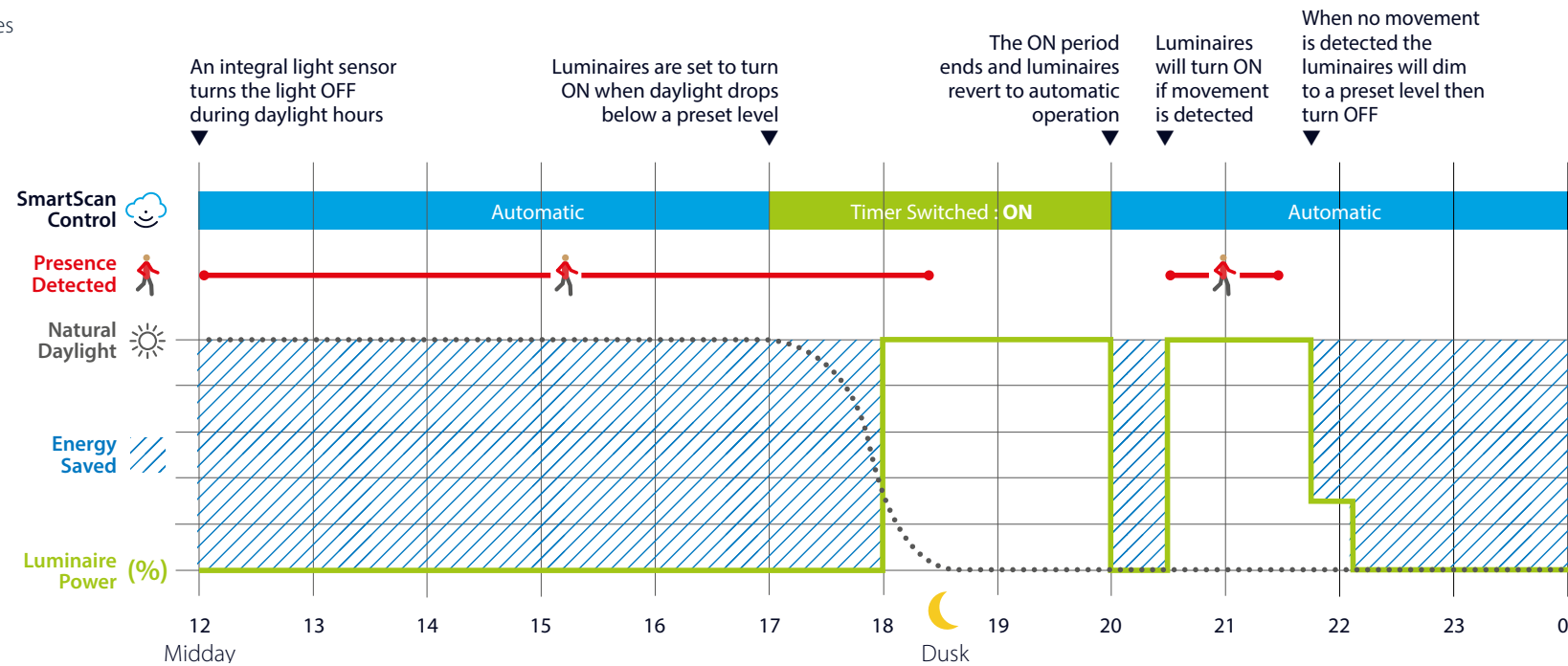
SMARTSCAN EXTERNAL

Times can be set on the SmartScan Website

External lighting can be used in a number of ways, so flexibility of control is required. ON and OFF times can be set on the SmartScan Website. SmartScan External groups can be configured in three ways:

- Presence detector control (default setting)
- ON between set times
- OFF between set times

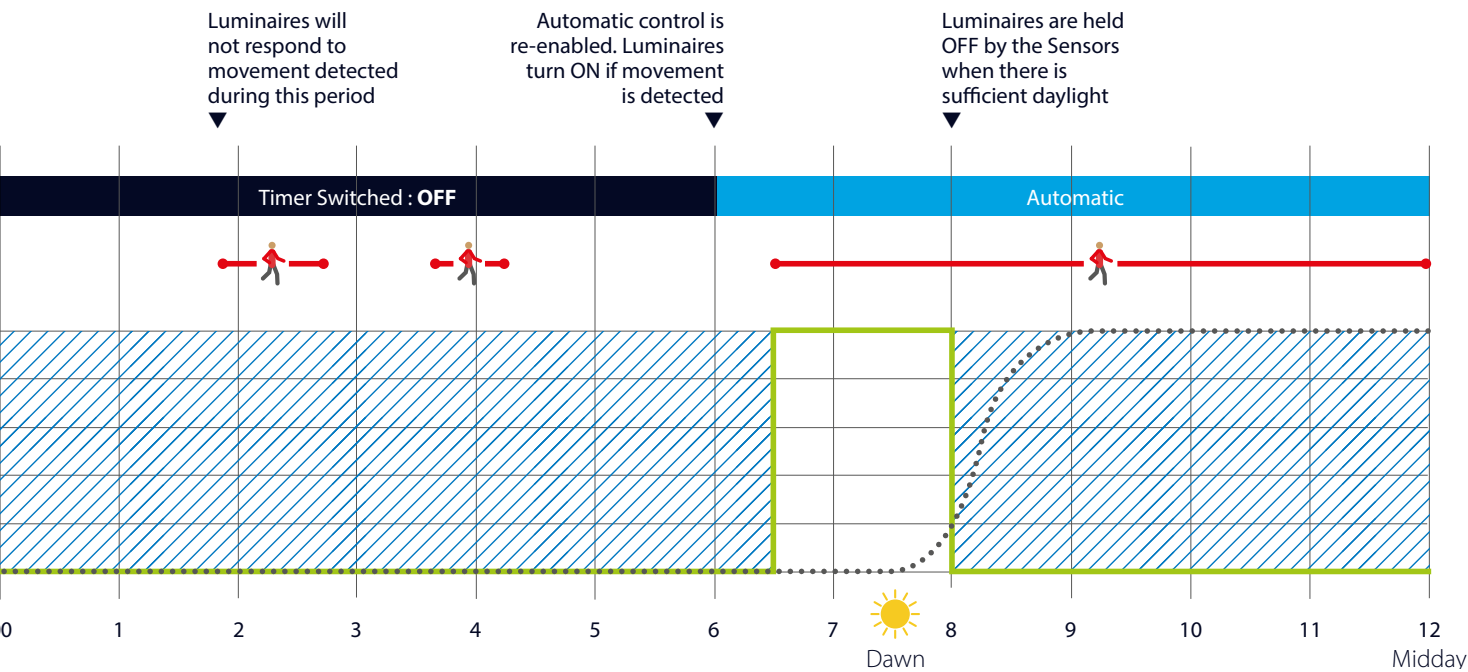
In all three scenarios, the integral light sensor ensures luminaires are OFF if there is sufficient daylight.





SmartScan Time Control

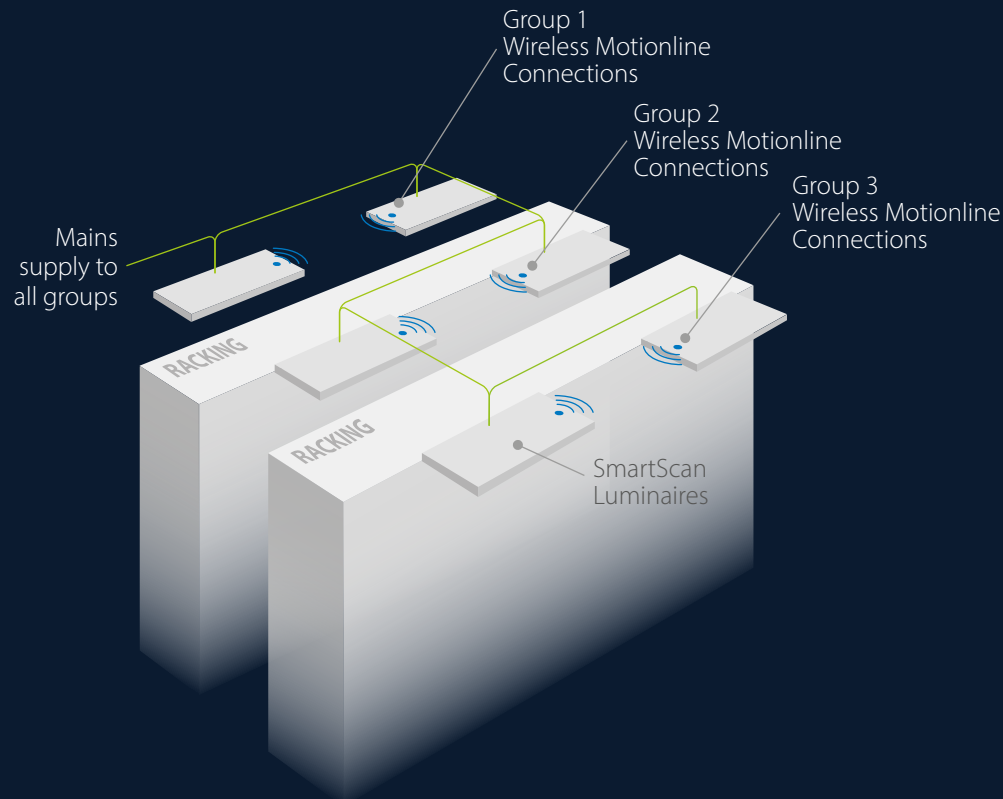
In the example below, timings are set to turn the luminaires ON between 17:00 and 20:00, and OFF between 00:00 and 06:00 the following morning. Automatic presence control (with light sensor override) is enabled outside of these times.



PRESENCE DETECTION GUIDE



SmartScan Internal uses a passive infra-red (PIR) movement sensor built into each luminaire. Infra-red sensing is a commonly used technology for lighting control, but it is important to consider a few factors in order to get the best performance from the luminaires.



Presence Detection

There are four different sensors available:

Standard Sensor – for use up to 8m

High Level Sensor – for use up to 18m

External Sensor – for use up to 8m

Radar Sensor – for use up to 4m

Motionline

If one luminaire detects movement, a signal is passed to all of the luminaires in the group triggering all luminaires to illuminate. This ensures effective group control and extends presence detection coverage. SmartScan luminaires utilise wireless mesh technology to replace the wired Motionline - particularly helpful in retro-fit and external applications.

Mounting Height

As the mounting height increases, so does the amount of movement needed to trigger the sensor. Hand movement may not be sufficient for sensors mounted higher than 6m therefore the person may need to be walking to be detected.

Positioning of the Sensor

Where possible, SmartScan luminaires should be positioned in such a way that the detection areas overlap. The SmartScan system has a sensor in each luminaire ensuring that the optimum detection level is easily achieved using conventional spacing.

STANDARD SENSOR



MOUNTING HEIGHTS UP TO 8 M

Ambient Temperature

In order for movement to be detected, the PIR sensor requires the moving object to have a temperature differential of at least 4°C from the surrounding area. In a typical indoor application there is sufficient difference between a person, with a typical external skin temperature of 32°C (measured on the head or hands), and the surrounding ambient temperature of 20°C. However, as the ambient temperature rises or falls there are certain factors to consider:

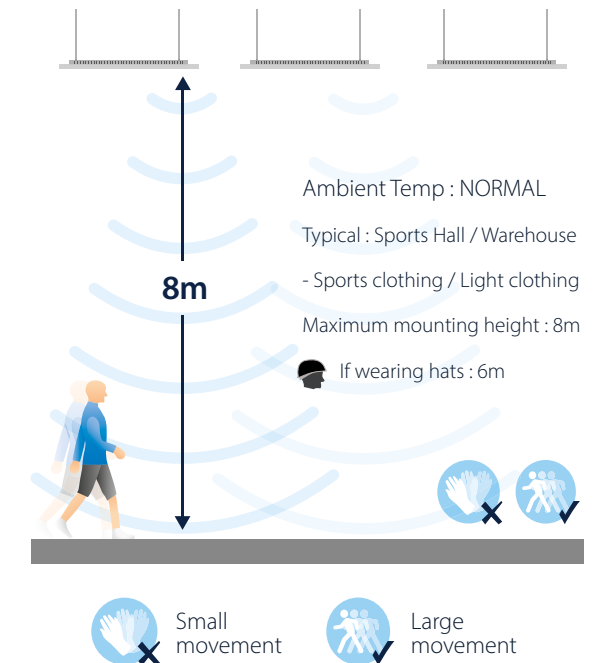
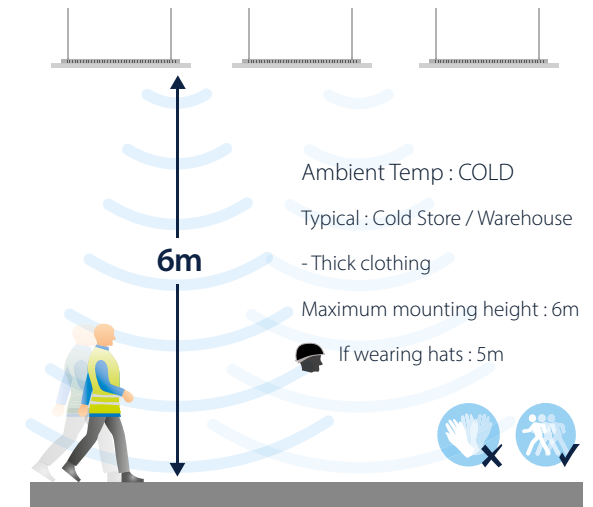
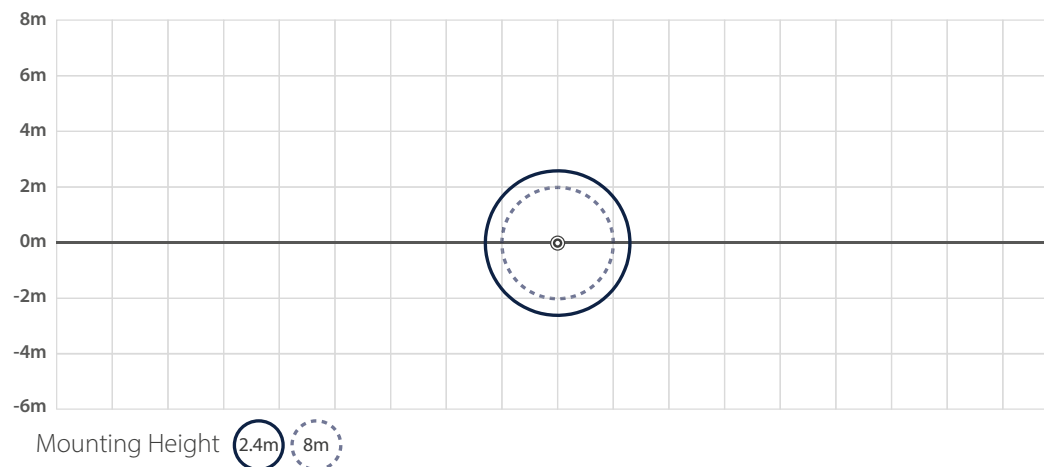
Low Ambient Temperature

In low temperature applications personnel often wear insulating clothing. This can reduce the thermal image presented to the sensor reducing its effectiveness.

High Ambient Temperature

In higher ambient temperature applications (>30°C) the sensitivity may be reduced as the differential between ambient and body temperatures is reduced.

SmartScan Sensor - Detection Area



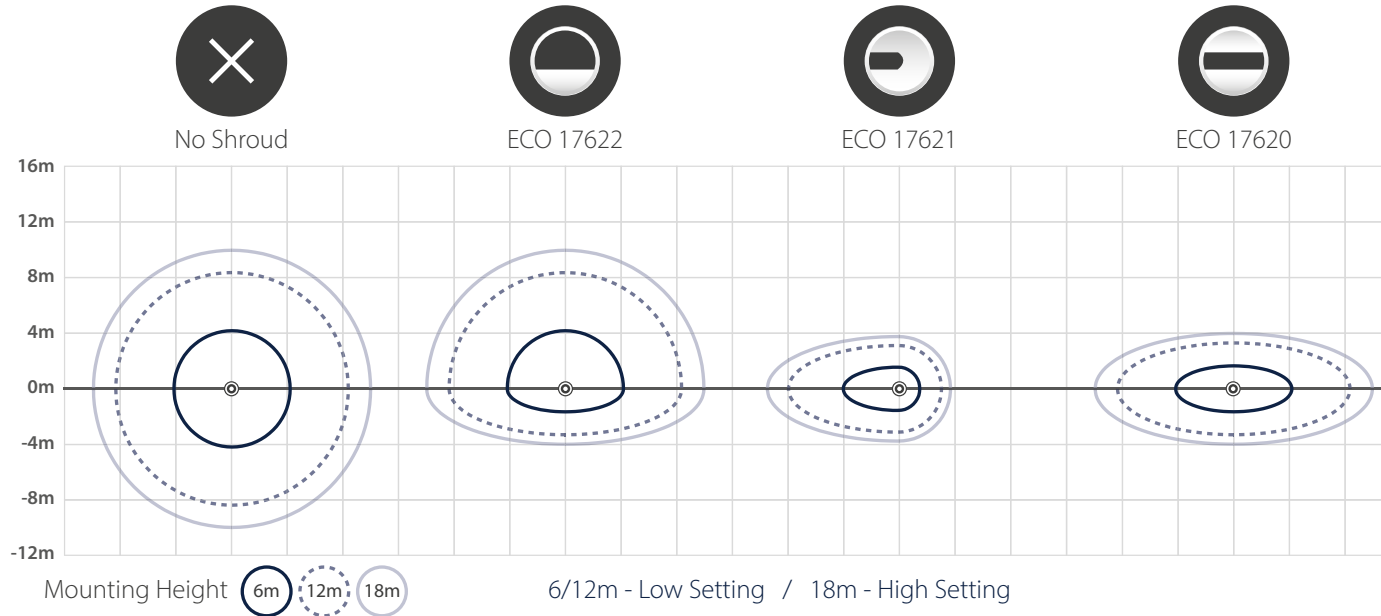
HIGH LEVEL SENSOR



MOUNTING HEIGHTS UP TO 18 M

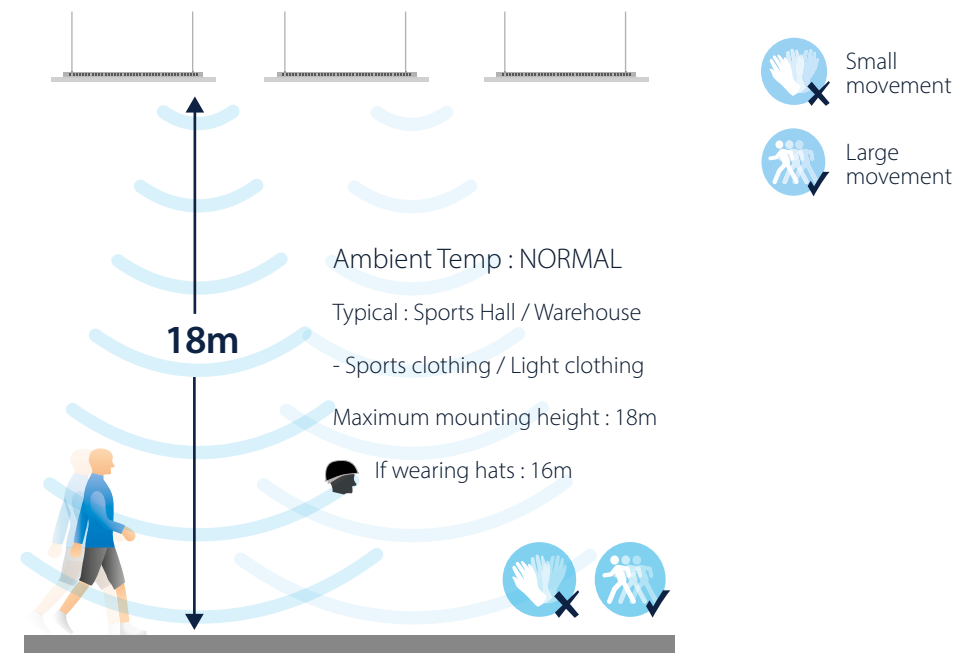
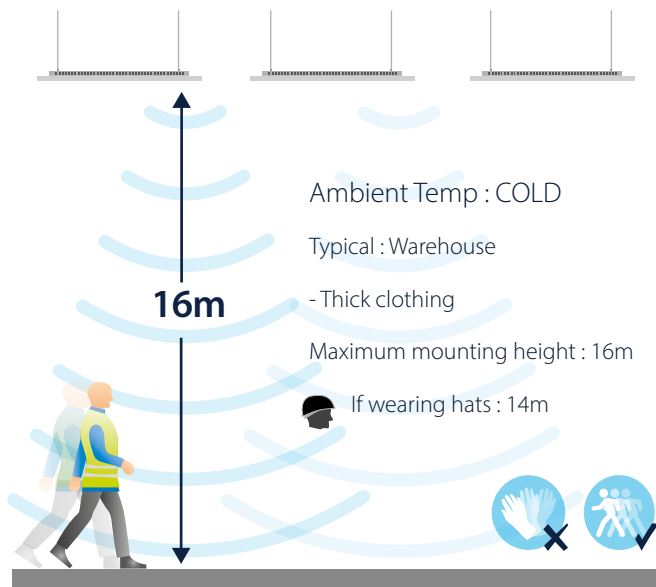
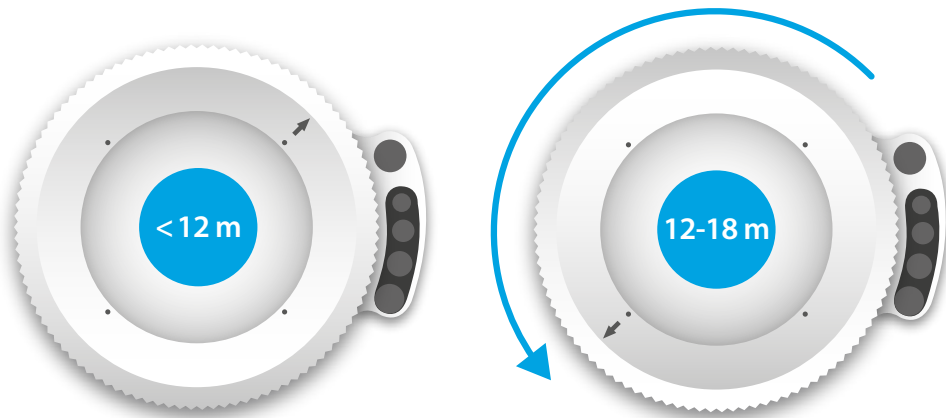
The High Level Sensor is optimised for mounting heights up to 18m. An adjustable lens allows for the detection area to be tuned to suit the application perfectly, with the lens at the “high” setting for all applications above 12m. All SmartScan settings can be configured from ground level using the SmartScan Programmer.

High Level SmartScan Sensor - Detection Area



Optional shrouds can be fitted to the High Level SmartScan Sensor to restrict the detection area if required. For example, ECO17620 could be used in racking areas to avoid detecting movement in adjacent aisles.

For optimum presence detection it is recommended that luminaires are grouped using Motionline. In retrofit applications SmartScan provides a wireless Motionline signal so removing the need for any additional cabling.



SYSTEM

SMARTSCAN EXTERNAL SENSOR



MOUNTING HEIGHTS UP TO 8 M

Modern lighting schemes for external spaces are based on minimising light pollution whilst ensuring that public walkways and roads are well lit. SmartScan External luminaires have been designed so that the detection area of the sensor is central to the light distribution of the luminaire.

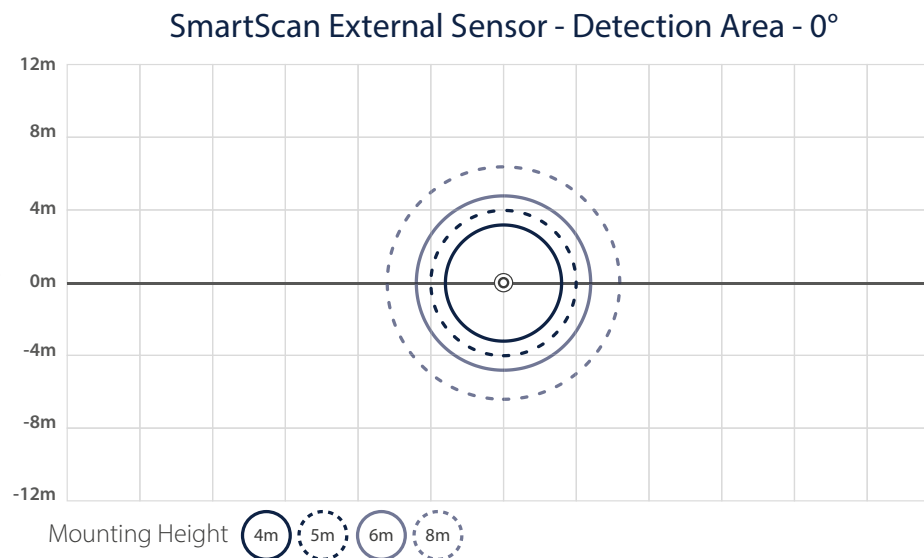
In areas where trees or bushes are present please ensure that any foliage is trimmed back behind the luminaire to ensure optimal movement detection and lighting efficiency.

SmartScan External uses a passive infra-red (PIR) movement sensor built into each luminaire. Infra-red technology is commonly used for lighting control, but when used externally a number of factors are increasingly important.

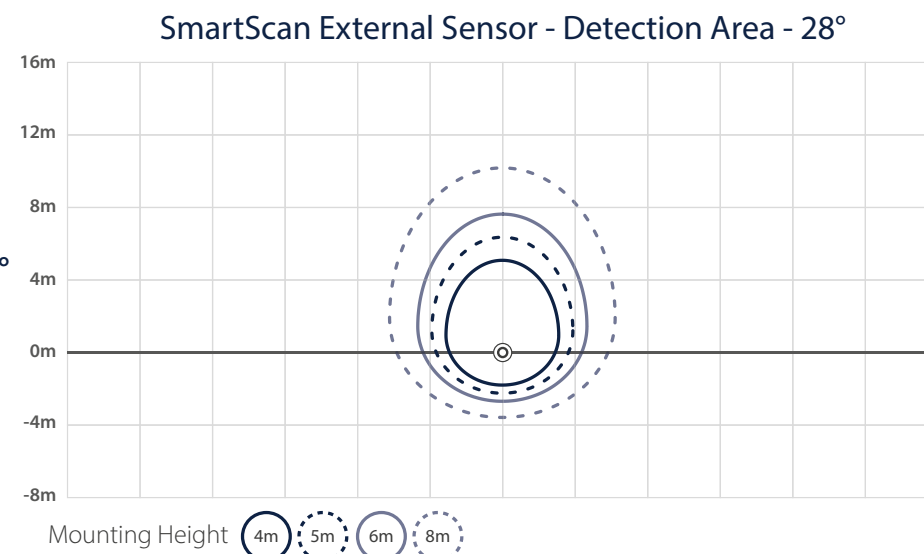
Angle of the Sensor

The majority of SmartScan External luminaires are wall or column mounted, projecting the light away from the wall or column. The sensor is angled at 28° from the horizontal to focus the presence detection within the lit area, providing limited detection coverage behind the column. Some SmartScan External luminaires are designed for use in canopies and therefore the sensor is directed vertically towards the floor.

0°



28°





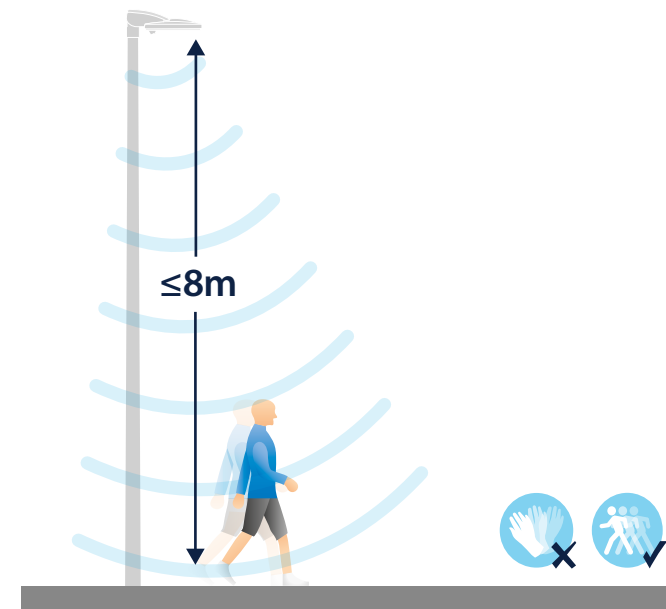
Ambient Temperature

The PIR within the sensor relies on detecting the heat of a person moving across the detection area. For best reliability the temperature of the person should be at least 4°C different from the background, in this case the floor.

As the ambient temperature drops people wear more layers or coats to keep warm. This insulates the body, therefore a larger movement must be made in order for presence to be detected, or presence may not be detected at the extremities of the detection area.

The amount of time that an individual has been outside can also vary detection sensitivity. Clothing will chill to match the outside temperature. The sensor is more likely to detect a person leaving a building on a cold day than somebody that has been outside for long periods. Therefore they may not be detected until closer to the centre of the detection area.

The detection patterns detailed opposite are based on optimum conditions; the total area may reduce depending on the factors described above.



SMARTSCAN RADAR PRESENCE DETECTION



MOUNTING HEIGHTS UP TO 4 M

SmartScan Radar uses a 24GHz high frequency sensor to detect movement. This technology benefits from increased sensitivity with fewer detection errors than traditional 5GHz microwave solutions.

Presence Detection of the Sensor

The system can be used in both wall and ceiling mounted applications for internal and external areas. With customisable sensitivity settings the system can be commissioned to suit the environment.

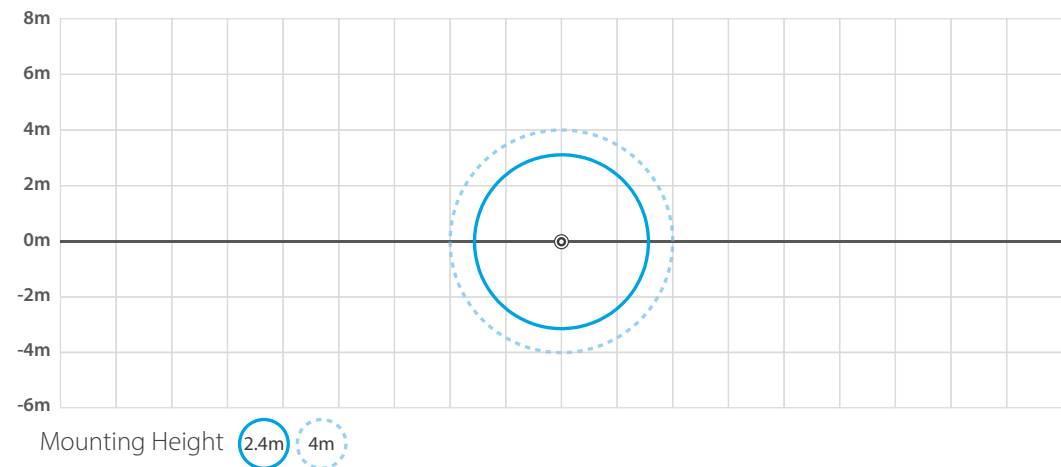
Motionline

It is strongly recommended that SmartScan luminaires are connected using Motionline. If one luminaire detects movement, a signal is passed to all of the luminaires in the group triggering all luminaires to illuminate. This ensures effective group-control and extends presence detection coverage. SmartScan Radar luminaires utilise wireless mesh technology to create switching groups. Particularly helpful in retro-fit and external applications.

Mounting Height

Suitable mounting heights up to 4m (2.5m max when wall mounted). Where possible, luminaires should be positioned in such a way that the detection areas overlap. The SmartScan Radar system has a sensor in each luminaire ensuring that the optimum detection level is easily achieved using conventional spacing.

Radar Sensor - Detection Area



IOT DEVICE MANAGEMENT

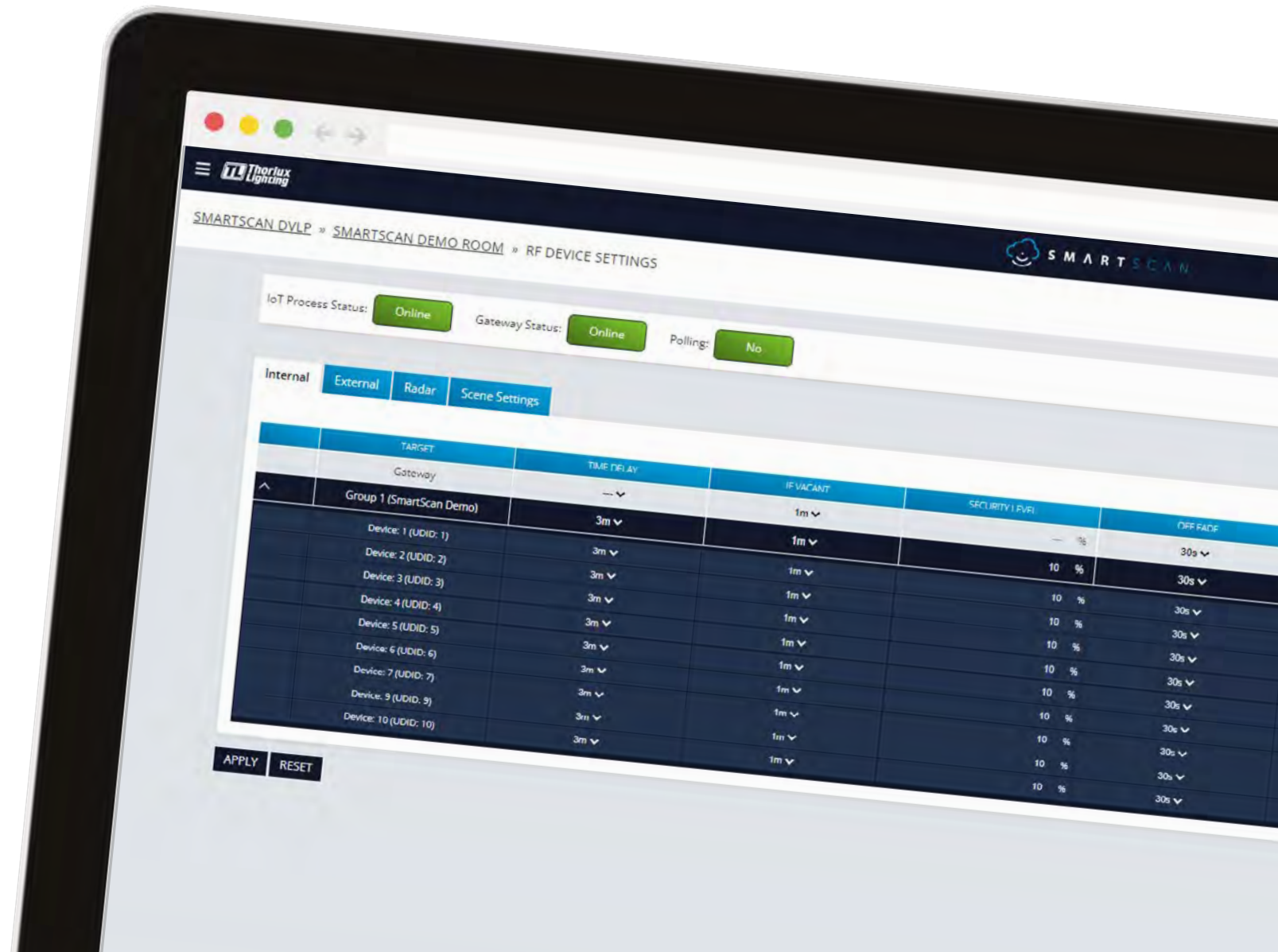


Users can change luminaire parameters via the SmartScan Website.

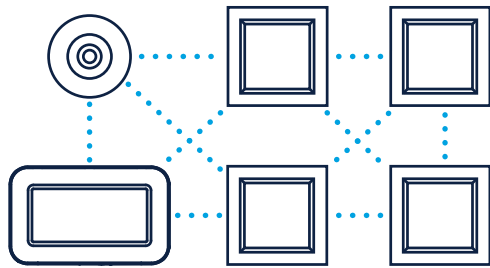
This includes configuration of:

- Switching groups
- Presence detection time delays
- Photocell operation
- Scene setting operation

Eliminating the need for programming locally this new feature provides a powerful tool for building managers, simplifying customisation of the SmartScan lighting management system.

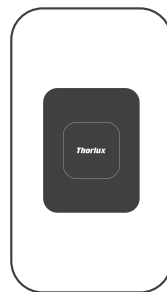


SYSTEM SECURITY



SmartScan Luminares

An operational frequency of 868MHz (922MHz in Australasia) provides excellent transmission distances and better penetration of signals.



SmartScan Gateway

The IoT Gateway connects to Amazon Web Services using X.509 certificates over a secure TLS (Transport Layer Security) connection via mobile GSM networks or an optional LAN connection.



Your Device

The SmartScan Website uses the very latest encryption protocol (TLS 1.3) for secure and reliable transfer of data between computer devices. The website has passed a full penetration test and an attestation letter is available upon request. Full penetration tests are repeated annually.



SmartScan Web Services

All data is hosted on servers located within the UK with Bytemark, an Iomart company, certified to ISO27001, ISO9001, ISO22301, ISO20000, ISO14001 and ISO 50001.



SYSTEM

HOW TO SPECIFY SMARTSCAN LUMINAIRES



SmartScan can be tailored to suit specific requirements.

It can be used for :-

- Energy saving control
- Automatic emergency lighting testing*
- Energy monitoring
- Emergency test results
- Luminaire status reports
- Occupancy profile
- Air quality
- ColourActive control

* At Platform 1 SmartScan emergency luminaires may self-test at any time. Consequently, caution should be exercised in situations where this may be inconvenient (such as hotel rooms or hospital wards). At Platform 2 specific testing times can be set via the SmartScan Website (SmartScan Gateway required).

THERE ARE SIX POSSIBLE VARIANTS
OF SMARTSCAN LUMINAIRES

1



SmartScan Internal or External luminaires

To specify SmartScan Internal or External luminaires, use the “**SS**” suffix (“**S**” when using a product configurator).

E.g. RL 19069**SS**

2



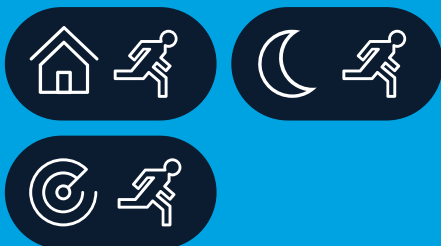
Integral SmartScan Emergency luminaires

A range of Thorlux luminaires are available with integral SmartScan Emergency. This involves the addition of the SmartScan Emergency Transceiver (SET) which can be mounted in many, but not all Thorlux integral emergency luminaires.

To specify integral SmartScan Emergency luminaires use the “**W**” prefix.

E.g. **W**RL 19071L

3



SmartScan Internal, External or Radar luminaires combined with integral SmartScan Emergency

Certain luminaires are available with combined SmartScan Internal, External or Radar control and SmartScan integral Emergency. The luminaire's emergency module will communicate its status via the SmartScan Wireless Sensor.

To specify SmartScan Internal, External or Radar luminaires combined with integral SmartScan Emergency, use the **"W"** prefix AND the **"SS"** suffix (**"S"** when using a product configurator).

E.g. **WRL 19069SS**

NOTE: The **"W"** prefix must be used to specify integral wireless SmartScan Emergency.

4



Dedicated SmartScan Emergency luminaires

A range of Thorlux luminaires are available with inbuilt wireless technology.



Dedicated SmartScan emergency luminaires benefit from a 5 year battery warranty.

These luminaires are specified as SmartScan Emergency by using the **"W"** prefix.

E.g. **WLX 17463**

5



SmartScan ColourActive luminaires

SmartScan ColourActive luminaires utilise the SmartScan Sensor, combined with tuneable white DALI drivers and dual channel LED circuit boards.

To specify a SmartScan ColourActive luminaire please refer to www.thorlux.com/colouractive to see a list of available products.

ColourActive luminaires have a **"CA"** suffix as well as a unique part number.

E.g. **JUB 18801CA**

6



SmartScan Radar luminaires

A range of Thorlux luminaires are available with integral SmartScan Radar technology.

A list of SmartScan Radar compatible luminaires can be found here:

www.thorlux.com/smartscan-radar

These luminaires are specified with an **"R"** suffix.

E.g. **PS 17312R**

SMARTSCAN SPECIFICATION



Each luminaire shall be equipped with an 'intelligent' electronic sensor providing movement detection, light level sensing and an infra-red receiver for programming and remote control. Luminaires shall be capable of being linked together to form motion groups. Linking shall be possible wirelessly using an 868/922 MHz transceiver. Movement detected by one sensor will be signalled to all other sensors in its group. No bus power supply or other ancillary control devices will be required to facilitate such operation.

Sensors shall be capable of 'absence' mode operation in conjunction with a scene control plate or infra-red remote.

Each sensor will have a configurable fade to off rate that can be set using the hand held remote programmer or using the online controls through the web portal.

Each sensor shall provide individual dimming of the luminaire and maintain a set illumination level. Grouped dimming shall not be acceptable for daylight control. Sensors shall be fully programmable and reconfigurable using a hand held infra-red programmer. The programmer shall be capable of reading back and displaying current sensor settings and power/maintenance monitoring information from individual luminaires. Monitoring can be reset by the user. Sensors to be capable of operating DALI digital drivers.

Emergency luminaires shall be self-test with built in wireless capability, operating on the same wireless network as the standard intelligent luminaires. Tests can be initiated using a hand held infra-red programmer as well as retrieving emergency operational status information.

The system shall be monitored by a central wireless Gateway. This device will upload system status and energy performance, occupancy and air quality data to a website for users to view in a graphical format or on an interactive drawing.

Wireless connectivity

Luminaires shall be capable of being inter-connected wirelessly. Operational frequency shall be 868/922 MHz with low data rates - less than 1%. The system shall work on a mesh networking principle. Programmable settings can be altered from floor level using a hand held infra-red programming device or configured remotely using the website.

Scene control

Sensors shall be capable of responding to scene controls from a wall-mounted scene control plate, a hand-held remote controller or through the Smartscan App. Each sensor shall be individually programmed and reconfigurable for each of the six scenes. The system shall be capable of setting either fixed scenes which are a percentage of full output, or automatic scenes which will maintain an illumination level expressed as a percentage of the standard light level setting. The scene control plate will also be able to recall five pre-set dimming levels.

Remote controllers should be supplied with wall brackets and optional locking mechanisms. The scene plate shall have the flexibility to be mains or battery powered providing flexibility for positioning and installation. Each control group shall be capable of using multiple scene control plates. When the area is vacated, the whole system should automatically revert to an automatic energy saving mode.

Addition of non-intelligent 'secondary' luminaires

The system shall be capable of switching non-intelligent 'secondary' luminaires based upon movement detection of the main group of intelligent luminaires and shall be capable of being reconfigured for all conditions - i.e. normal (automatic) operation, scene and vacant conditions.

Emergency luminaires

Emergency luminaires shall be self-contained LED type, capable of communicating status via the wireless mesh network to the Gateway. System test times and other parameters shall be programmed via the website, this information shall be automatically downloaded to the Gateway. The Gateway shall control all emergency testing and reporting automatically.

Website system monitoring

All luminaires shall report status to the Gateway once per day. This will include failure status, energy performance data, occupancy profile. Air quality information will also be reported if an Air Quality Sensor is fitted. These records shall be uploaded to a website periodically where the data will be stored securely and displayed in graphical format. The website will also store supporting site documentation including 'as fitted' drawings, interactive drawings, commissioning certificates and any other documentation required by the end user.

Website luminaire control

Using the web portal basic operating settings of all luminaires shall be configurable by an approved user. The settings can be configured through the dashboard or on the interactive drawings. Where lighting scenes are used these will also be configurable through the web portal. The web portal will apply and synchronise these changes immediately with each luminaire.



Occupancy

Each luminaire should be capable of monitoring and logging up to 24 hours worth of movement detection data. This data will be uploaded to the web portal and will be displayed in graphical format on the dashboard and as a heat map on the interactive drawings. An archive of data for each luminaire shall be stored and available for recall by the user. The luminaires when configured in groups will have the capability to report room occupancy information on the web portal dash board as well as the interactive drawings.

SmartScan ColourActive luminaires

Luminaires shall use dual-populated PCBs with both 3000K and 6500K LEDs. All luminaires shall be fitted with dual channel DALI device type 8 control gear, fully compatible with BS EN 62386-209:2011, so that the outputs can be mixed to create a range of colour temperatures from 3000K to 6500K.

Colour temperature automatic control

A single wireless-enabled colour temperature control Gateway shall provide full automatic control for the installation. A secure, dedicated graphical web page, accessible only to authorised users, shall allow colour temperatures to be assigned to specific times of day. It shall be possible to select a preset schedule and also to save configurations as user-defined presets. It shall be possible to automatically limit the rate of transition so that colour temperature changes are imperceptible to the user.

The colour control Gateway shall wirelessly communicate with all compatible luminaires using 868/922 MHz transceivers and mesh network technology.

Radar luminaires

Radar luminaires shall be supplied with an integral 24GHz high frequency sensor providing presence/absence control combined with photocell operation. The photocell shall still be able to measure ambient levels of natural light ingress whilst the lamp is illuminated. The Radar sensor shall be equipped with wireless technology to allow zonal switching control and status retrieval via the wireless mesh network to the Gateway.

Colour temperature manual control

Sensors shall be capable of responding to colour temperature controls from a wall-mounted control plate or a smartphone app, available for both iOS and Android operating systems. The control plate shall offer selectable outputs of 3000/4000/5000/6500K.

Colour temperature control plates shall be of the capacitive sensing type. Each function shall have a status LED which shall display the current system status. Each control group shall be capable of using multiple scene control plates and its current setting will automatically display on all scene plates. When the area is vacated the whole system shall automatically revert to automatic global colour setting.

The smartphone app shall use a dedicated USB dongle with on-board wireless capability to interface with the mesh network. It shall offer the capability of manually selecting colour temperatures in a range from 3000K to 6500K in steps of 100K.

The smartphone app shall be capable of combining SmartScan scenes with set colour temperatures to produce location-specific scenes which set colour temperature and lumen outputs.

Environmental credentials

The manufacturer shall be independently certified to ISO14001. The manufacturer's processes shall be independently recognised as carbon neutral via systems of measurement and reduction and a certified carbon offsetting scheme. This shall include emissions from the lighting manufacturer's vehicles used for delivery and other project associated mileage (Scope 1 and 2).

Visit the [Thorlux Sustainability website](https://www.thorlux.com/sustainability) for more information.

Short specification text

Intelligent luminaires to be fitted with integral Smart sensor providing daylight harvesting, maintained illuminance, presence/absence detection and scene setting. The system shall be capable of group presence communication ensuring luminaires can illuminate in groups and with individual scene setting control using 868/922 MHz wireless mesh connectivity with building wide link address capability. System to include seamless integration of wireless emergency lighting luminaires. All aspects are to be programmable from floor level using an infra-red remote control programmer. The system to provide daily maintenance status reports, energy performance data, occupancy profiling information and air quality data for viewing on remote website with the capability to store drawings and documentation.

Download specification text from:
www.thorlux.com/smartscantext



Designers, manufacturers and suppliers
of professional lighting systems

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