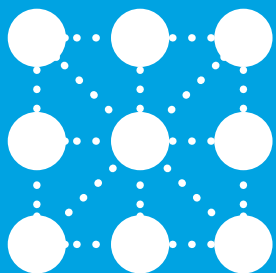


# What Are The Benefits?



## System Flexibility

SmartScan utilises a wireless mesh network. Each device acts as a repeater, ensuring that data signals always find a suitable communication path. Groups are easily created and changed providing future flexibility without altering wiring.



## Excellent Wireless Reliability

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



## Efficient Communication

Intelligent algorithm with low transmission of data - transmits less than 1% of total time (99% of time wireless is off) - reduces wireless traffic increasing reliability.



## Intelligent Connectivity

Software uses simple wait before transmit logic to ensure error free transmissions.



## Platform 2



### Reduced Installation Costs

The SmartScan Gateway and compatible SmartScan Internal, SmartScan External, SmartScan Radar and SmartScan Emergency luminaires simply require a mains connection. All communication cables are replaced by the mesh network so there is no need for data cables, additional power supplies or control modules.



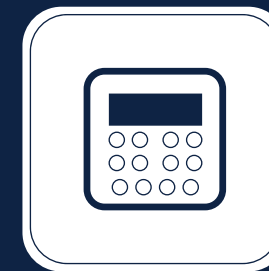
### Simple and Fast Commissioning

Using a single robust hand held infra-red programmer luminaires can be very quickly and easily commissioned, and all operational settings can be fine tuned in the future if desired.



### Made in the UK

Customer assurance that the system and luminaires are fully compatible - designed and manufactured by Thorlux in the UK. SmartScan builds on the ultra reliable first wireless generation of Smart - SmartTR.



### 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.

# SmartScan

## Platform 1

# How Does it Work?

### SMARTSCAN INTERNAL AND EXTERNAL

The factory fitted addition of a SmartScan transceiver, to a Thorlux Smart luminaire, introduces the latest wireless mesh network technology and replaces the wired Motionline communication signals between luminaires with sophisticated, trouble free wireless transmissions.

Each transceiver 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 to the schedule specified in BS EN 50172:2004. The operational status of each luminaire is displayed by the status LED and operational status information can be retrieved using the SmartScan Programmer. Manual tests can also be initiated at each luminaire using the SmartScan Programmer. The user, legally, will need to inspect each luminaire at prescribed intervals to monitor test status and manually log the results.





**Addressing - Each SmartScan transceiver can be assigned an address to suit its application. The following parameters are programmable:**



### **Building Address**

Identifies devices that are within the same system and forms the boundary for the wireless mesh network to prevent adjacent buildings communicating.



### **Group Address**

All luminaires with the same building address and the same group address will work together for presence detection and scene control.

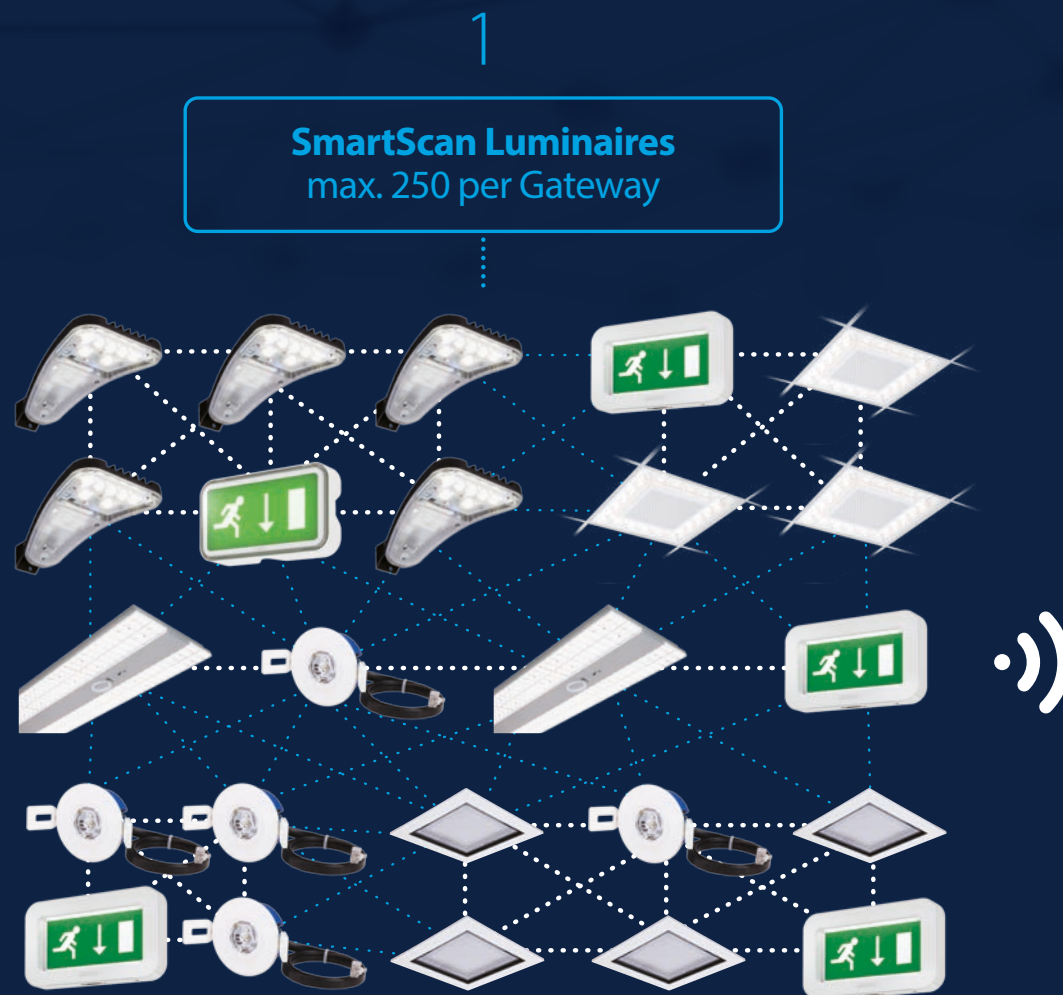


### **Device Address**

Individual luminaires within each group can be given a unique address to provide identification.

# SmartScan Platform 2 How Does it Work?

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

3

**SmartScan  
Gateway**

**SmartScan  
Web Servers**

**Your  
Device**







# What is SmartScan Internal?

**The Thorlux SmartScan System exploits the latest digital technology to provide a simple, effective method of lighting control which minimises energy consumption whilst retaining high levels of user comfort.**

A discrete sensor integral to the luminaire monitors ambient light and presence, controlling output to the correct level and ensuring that the area is only illuminated when occupied.

Lighting can account for a high percentage of energy consumed within a building, especially if uncontrolled discharge luminaires or old technology switch start fluorescent luminaires are installed.

Savings by the installation of automatic lighting control systems often exceed 70%.



# Motionline



**Motionline is a wireless connection between SmartScan luminaires enabling the creation of control groups. 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. Motionline ensures that there will always be a well lit comfortable environment. Once the last person leaves an area the luminaire waits for a pre-programmed period before turning off or dimming to a user pre-defined level.**



## WITH MOTIONLINE

With Motionline a group of luminaires can be turned on when any sensor detects movement.



## WITHOUT MOTIONLINE

Without Motionline each luminaire will only turn on if a person is within its detection zone.



# Daylight Dimming Techniques

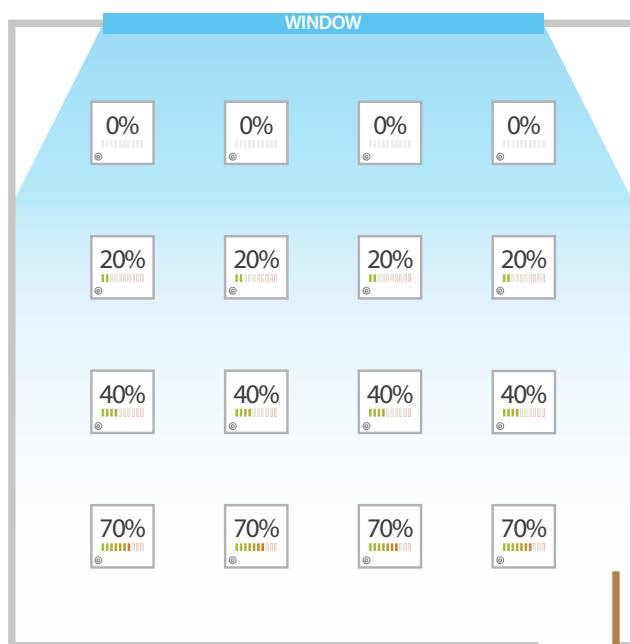
## DAYLIGHT LINKING WITH SMARTSCAN INTERNAL

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 adjust 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 area.

### 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.



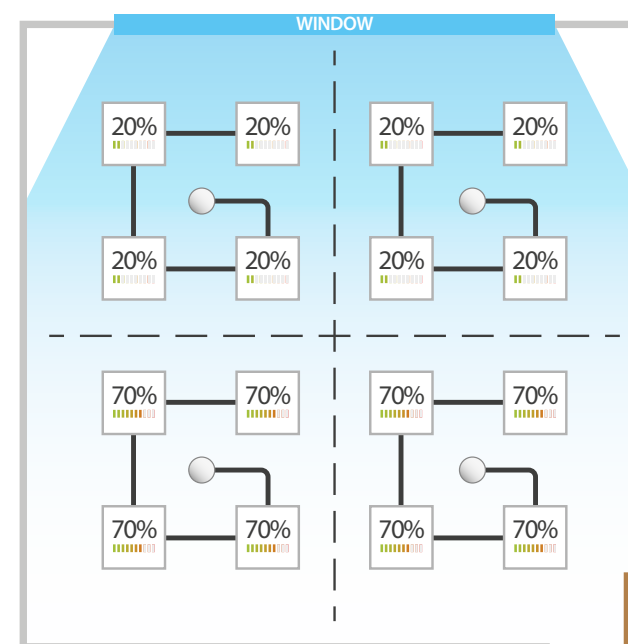
© SmartScan Sensor in every luminaire

## DAYLIGHT LINKING WITH THE SMARTSCAN STAND-ALONE SENSOR

Each Stand-alone SmartScan Sensor measures and adjusts the light output of the group of luminaires in unison according to the ambient light in its immediate surroundings.

### BRIGHT-OUT FEATURE

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

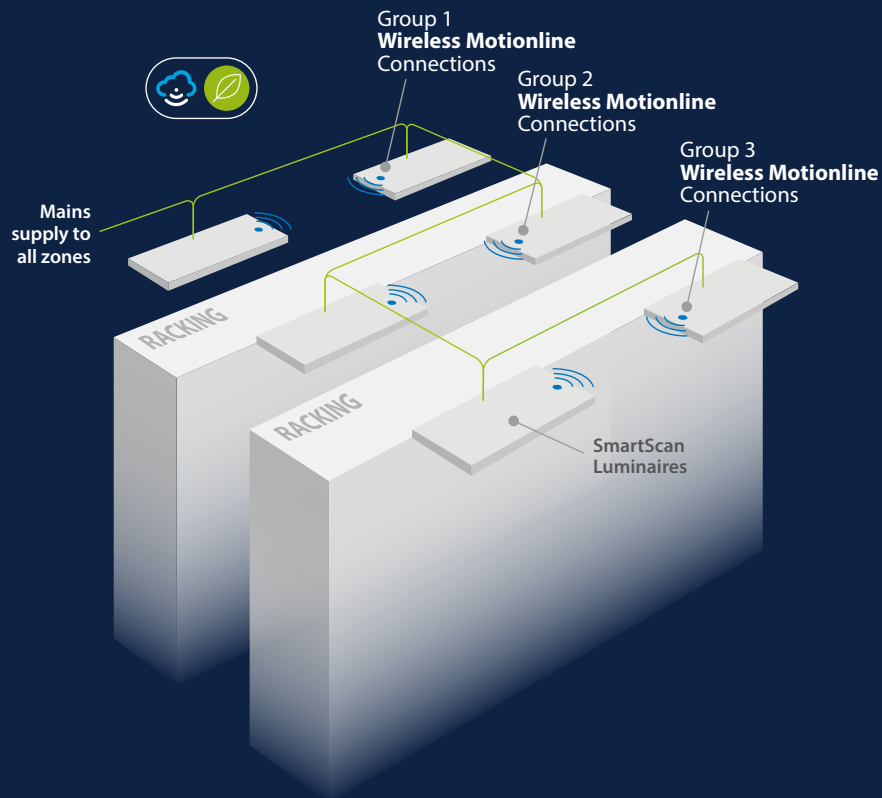


● SmartScan Stand-alone Sensor

# SmartScan Internal 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 two different sensors available:

Standard Sensor – for use up to 8m

High Level Sensor – for use up to 18m

## 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 SENSORS

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 8m

## AMBIENT TEMPERATURE

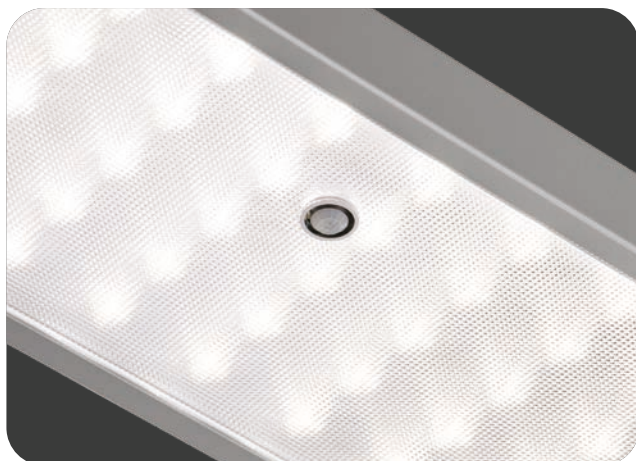
In order for movement to be detected, the PIR sensor requires the moving object to have a temperature differential of at least 4°C from the surrounding area. In a typical indoor application there is sufficient difference between a person, with a typical external skin temperature of 32°C (measured on 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

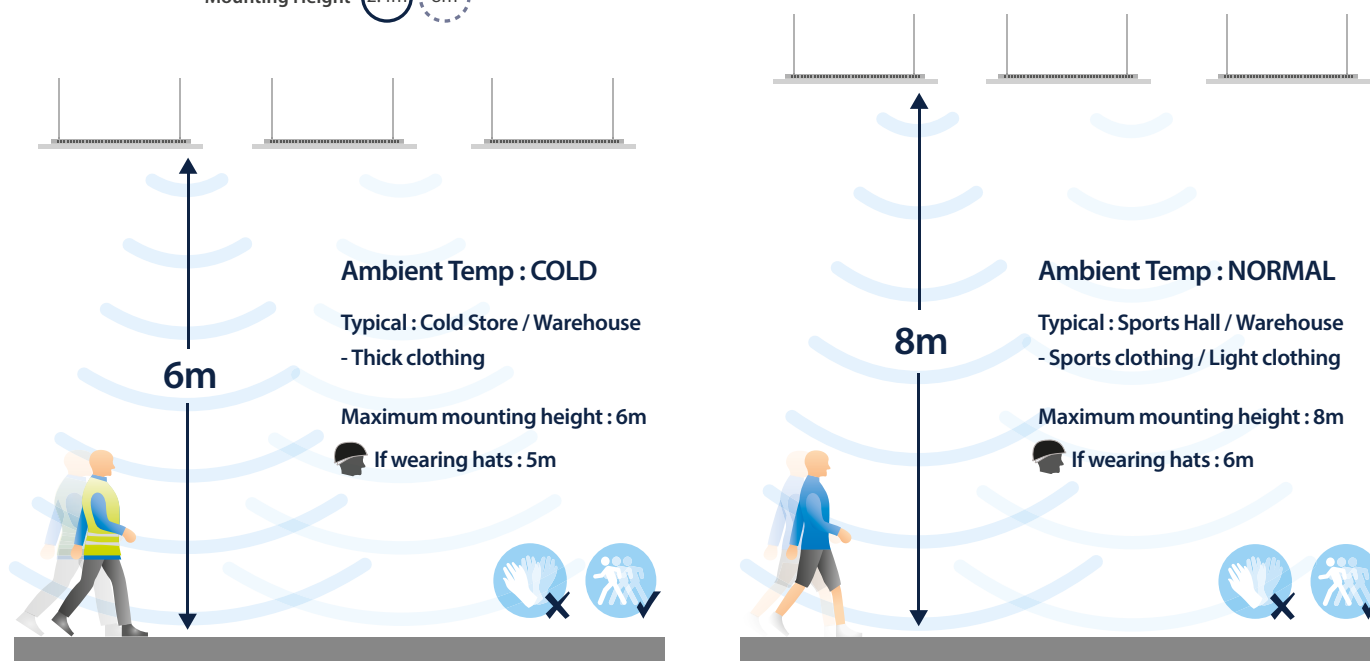
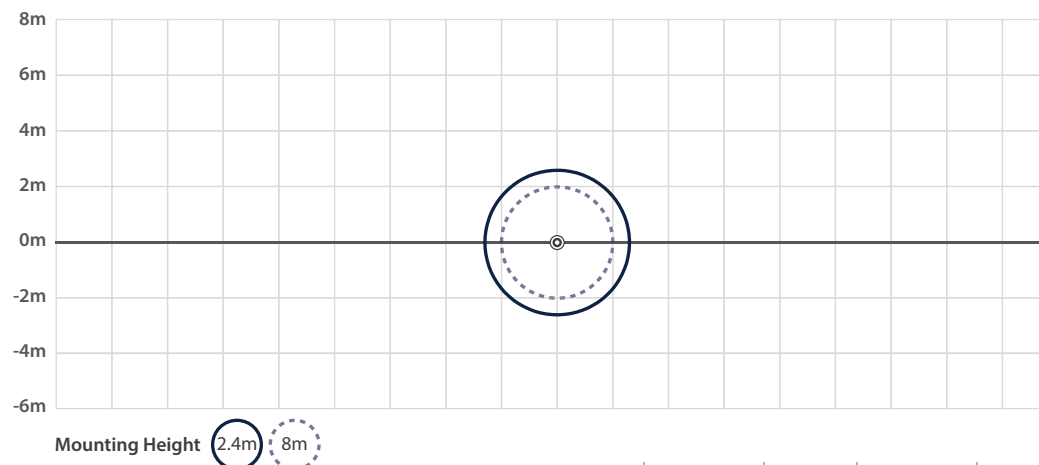
In low temperature applications personnel often wear insulating clothing. This can reduce the thermal image presented to the sensor reducing its effectiveness.

## 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.

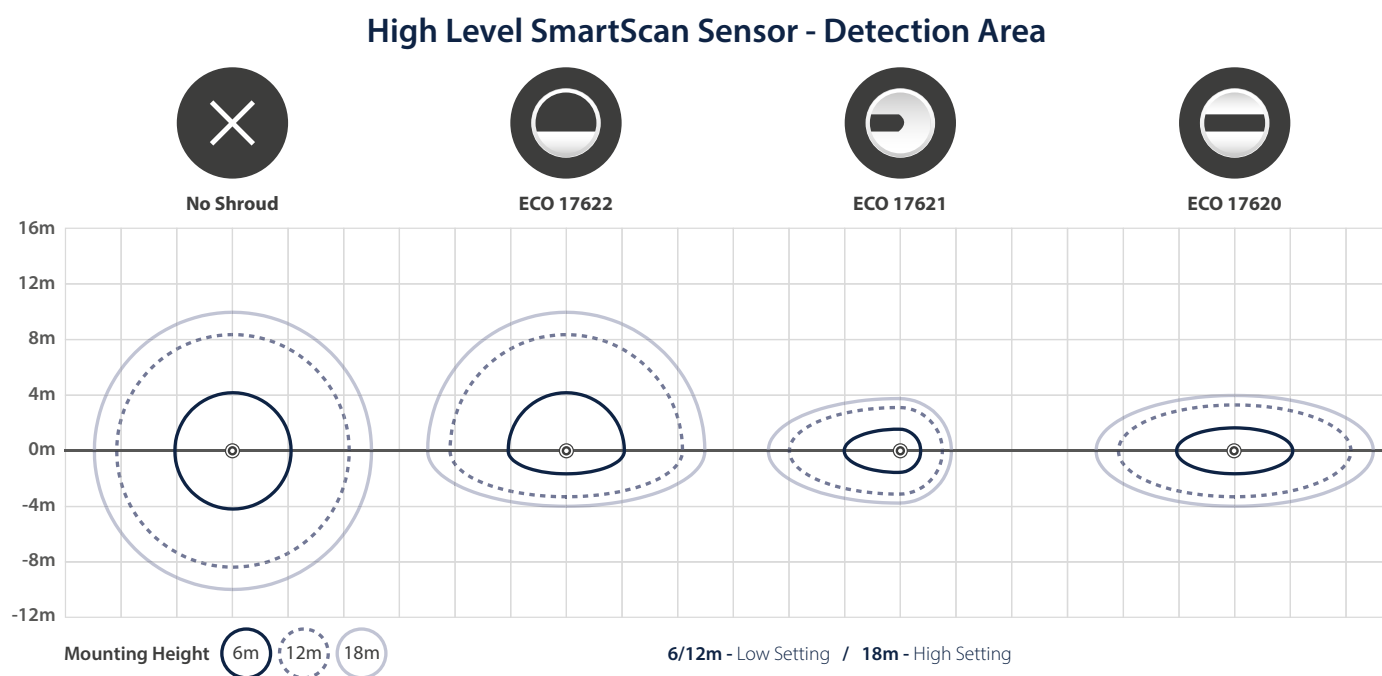


## SmartScan Sensor - Detection Area



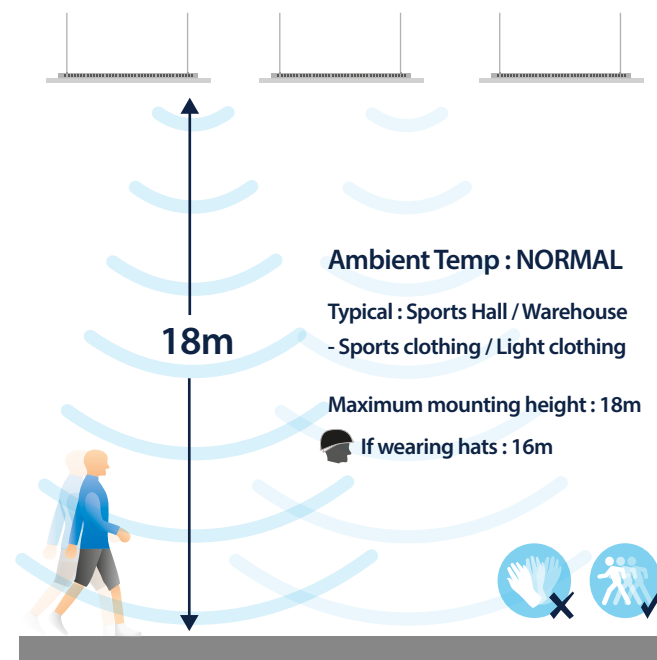
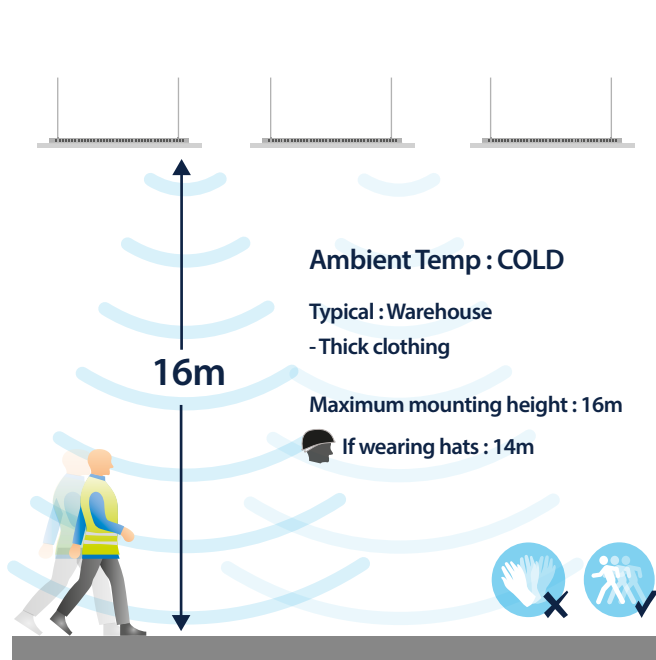
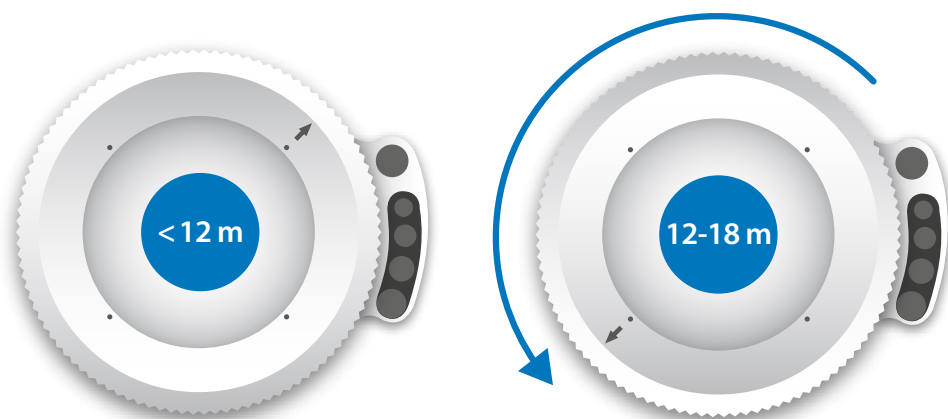
# High Level Sensor Mounting Heights up to 18m

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.



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

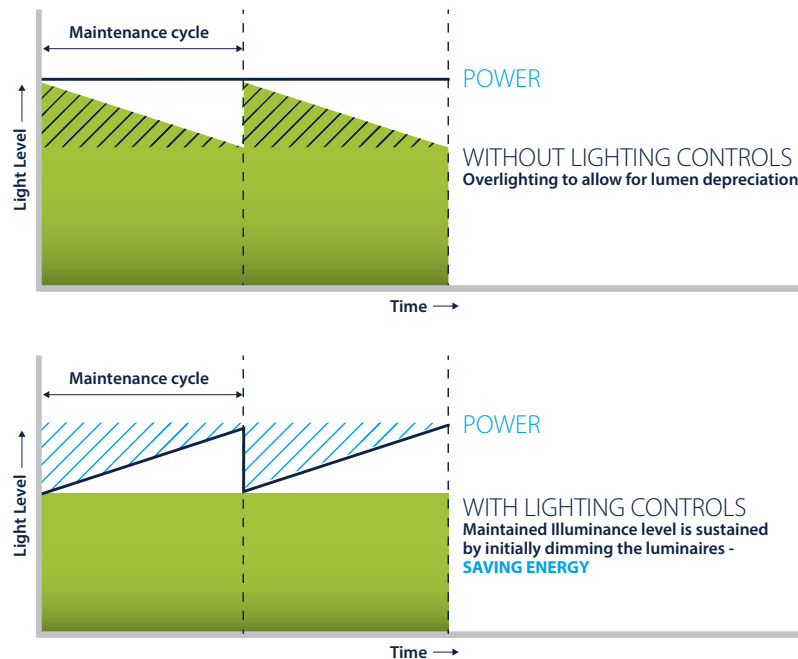


# Energy Saving with SmartScan Internal

## MAINTAINED ILLUMINANCE

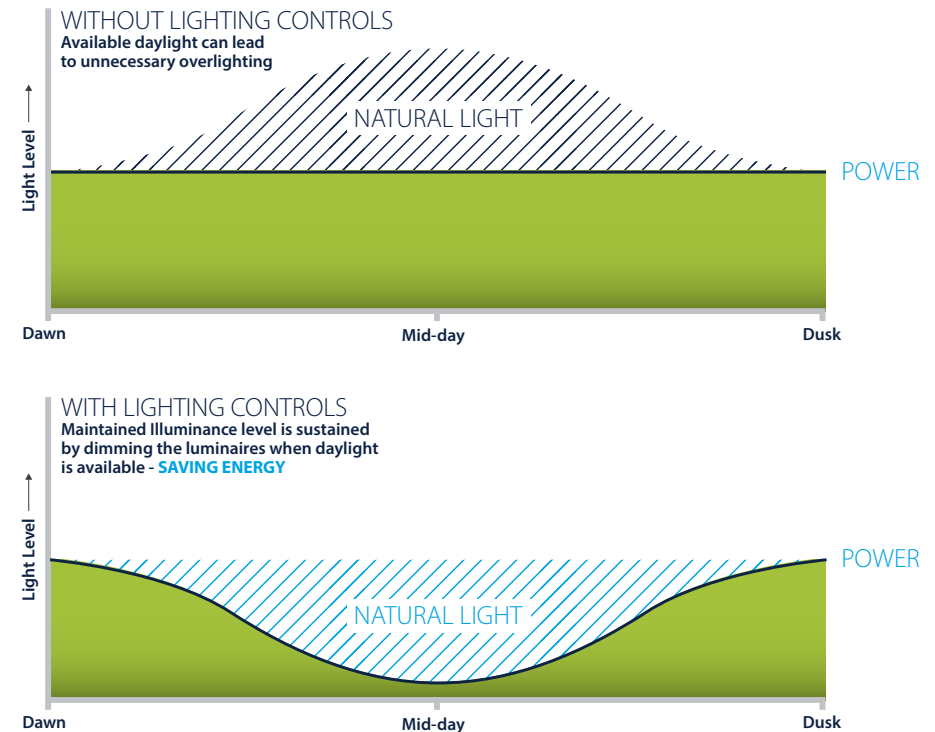
The accumulation of dirt and lumen depreciation cause light loss and uncontrolled schemes are initially overlit to compensate. This results in excessive energy consumption over the maintenance cycle.

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.



## 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, therefore reducing energy consumption. The result is further savings in addition to those achieved by maintained illuminance (see left).

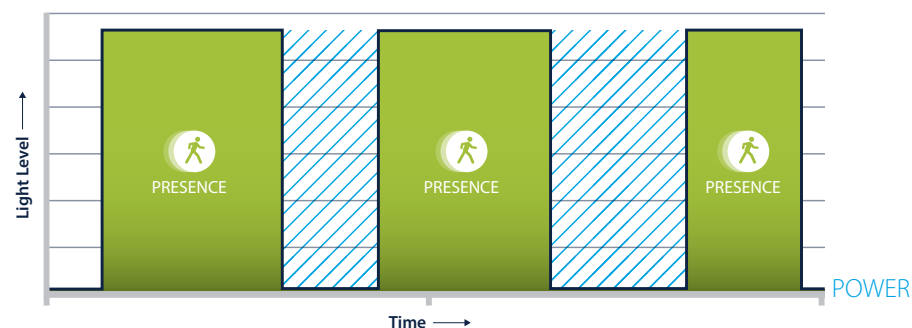




## PRESENCE DETECTION

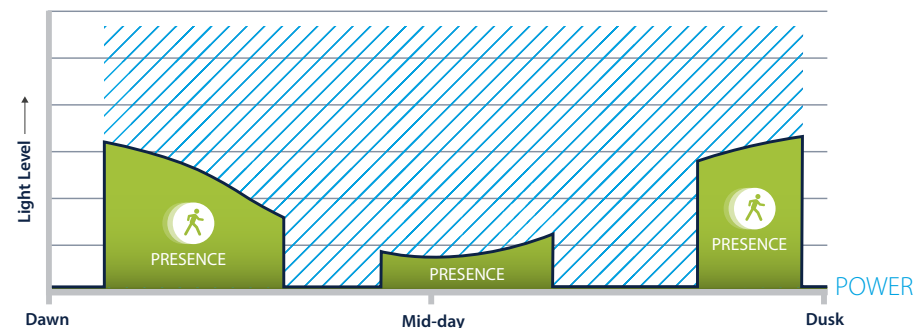
Passive Infra-Red (PIR) sensors are used to detect movement to turn the luminaires on. After a predetermined time of no movement the luminaires will turn off, saving energy.

Some PIRs 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 PIR will then monitor movement to turn the luminaires off automatically after a pre-determined time.



## COMBINE ALL THREE FOR MAXIMUM SAVINGS

Lighting controls that combine maintained illuminance, daylight dimming and presence detection will maximise energy savings, in some instances in excess of 70%. When the area is occupied the luminaire output will be reduced due to levels of ambient light. Even during the short winter days there can be sufficient daylight for the luminaires to dim, providing energy savings throughout the year. Thorlux SmartScan controls provide energy savings by combining maintained illuminance, daylight dimming and presence detection in a system that can be tailored to suit requirements.



LIGHTING FROM  
LUMINAIRES



OVER LIGHTING



ENERGY SAVED

# Manual Control



**Manual control of lighting may be required, either to provide a dimming option as well as switching, or to override any automatic settings should the need arise.**

In its simplest form manual control offers the ability to switch the luminaires on or off by switching the live supply. As luminaires become more intelligent, the variety of manual control options also increases.



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



Simple and flexible scene control is provided by the SmartScan Touch wall plate. Touch-sensitive buttons provide a tactile, user-friendly interface.



Insert key to unlock



Remove key to lock





# Scene Control

**Scene control 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 may be set to ignore any automatic settings.**

A scene command will instruct each luminaire to revert to a pre-programmed light level set during commissioning. Each luminaire can be set to a different light output if required.

Luminaires can be set to one of the following parameters for each of the three available scenes:

- Fixed output from 1-100%. Fixed scenes will provide a constant light output and will not adjust with ingress of daylight.
- Automatic output 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 level. For example, a classroom may be set to achieve 300 lux for children's education, the light level can be boosted to 160% to achieve an average of 500 lux if that same classroom is to be used for adult educational needs.
- Off

It may be desirable to switch on feature LED luminaires for effect around the room's perimeter via the SmartScan Hub (See page 28).

Simple and flexible scene control is provided by the SmartScan Touch wall plate, Smart Scene remote control handset or SmartScan Wireless Switch Module.

When a particular scene is no longer required another scene can be selected, or by pressing the ECO (automatic) 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.

SmartScan Sensor factory pre-set scenes are set to:

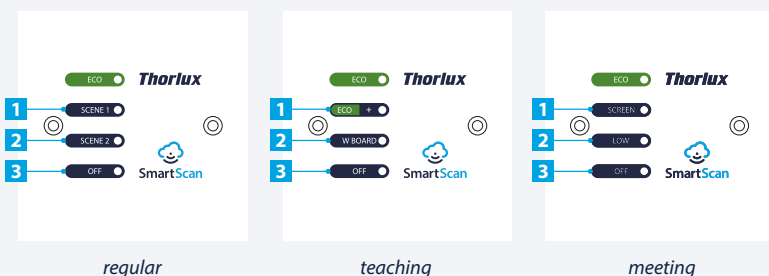
Scene 1 = fixed 50% / 2 = fixed 25% / 3 = off

SmartScan Hub factory pre-set scenes are set to:

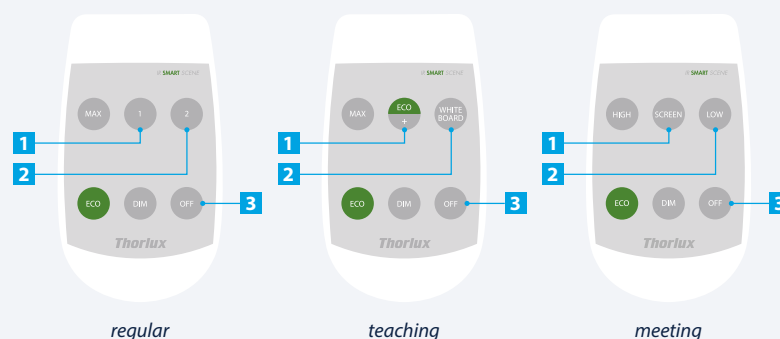
Scene 1 = ON / 2 = ON / 3 = OFF

The response of each luminaire to a scene command is set using the SmartScan Programmer.

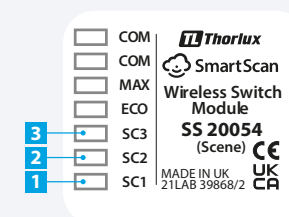
## SMARTSCAN TOUCH WALL PLATE OPTIONS



## SMART SCENE HANDSET OPTIONS



## SMARTSCAN WIRELESS SWITCH MODULE



**1** Scene 1

**2** Scene 2

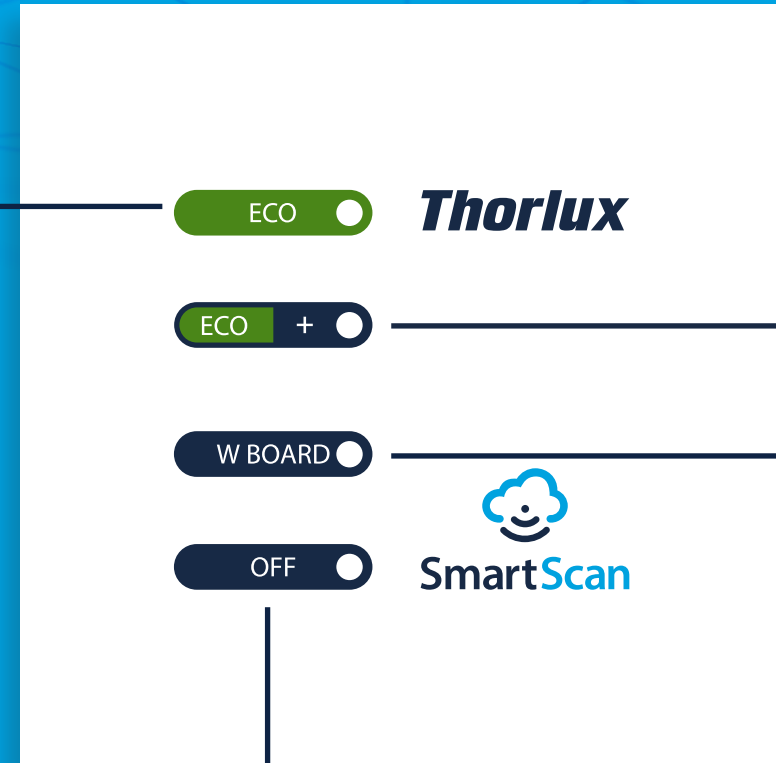
**3** Scene 3

# Example of SmartScan Scene Control

Unlimited SmartScan Touch kits or Smart Scene handsets can be used in one area. When the room is vacated and after the luminaires have automatically turned off, the system reverts to ECO mode. All SmartScan parameters can be adjusted to suit individual requirements using the SmartScan Programmer.



Maintained level, in this example commissioned at 300 lux, feature lighting, if used, switches off. Maximum energy saving mode.



Teaching Version



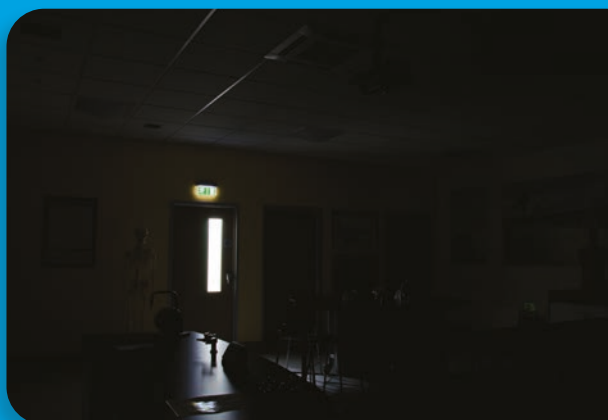
Scene 1

Luminaires boost to maintain 500 lux. Ideal for art classes, technology or adult education. Feature lighting, if used, switches off.



Scene 2

Luminaires adjacent to the teaching wall dim to 25% of the maintained ECO level, the luminaire closest to the whiteboard turns off. Others remain at the same setting. Feature lighting, if used, can switch on to highlight wall art.



Scene 3

All luminaires turn off \*

\* Factory default "off" can be re-programmed to suit.

# Slave 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 “slaves” 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 standard control gear (suffix Thorlux luminaire catalogue number with “L”).

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

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.

#### SmartScan Hub



#### SmartScan Stand-alone Sensor

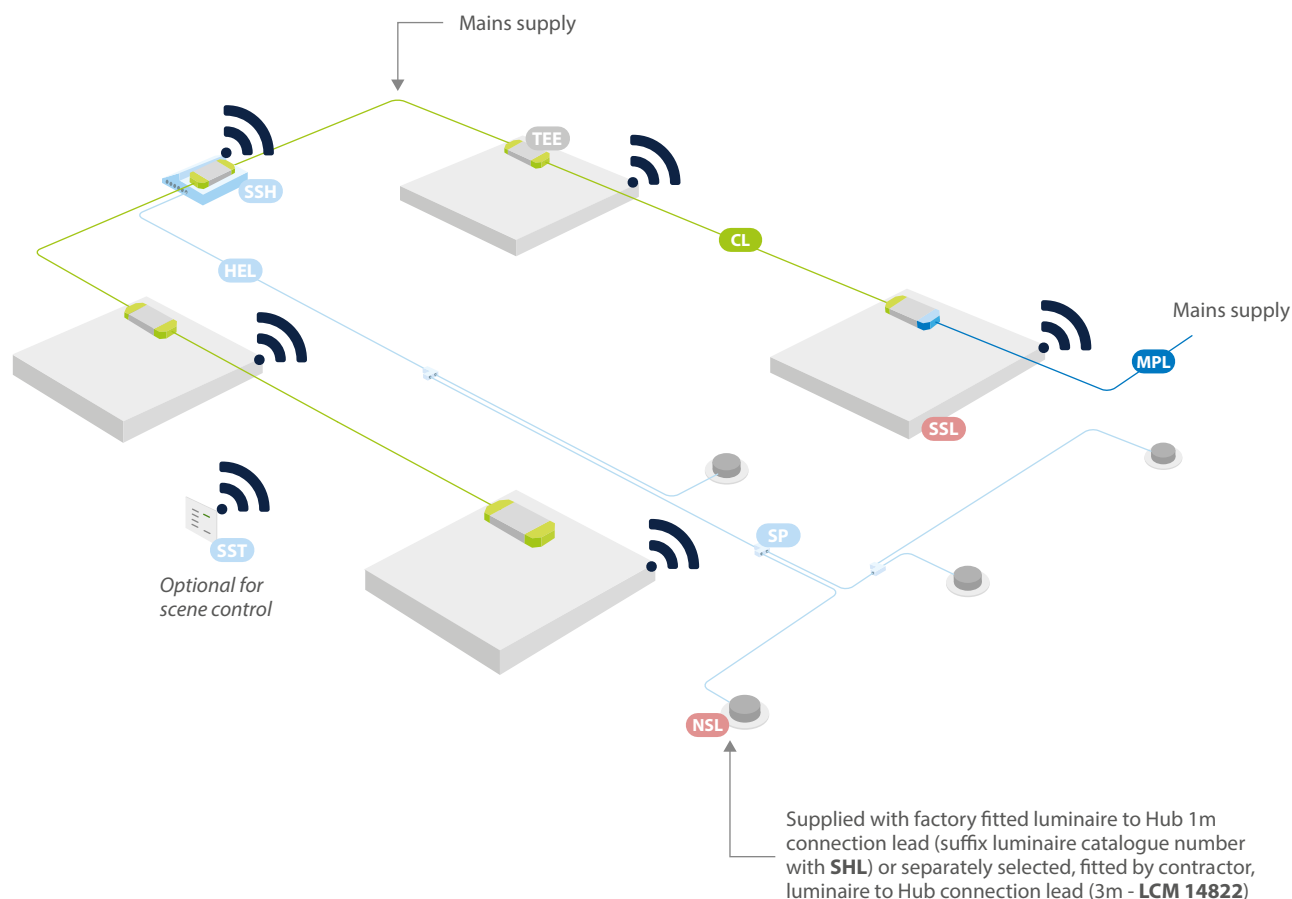




# Slave luminaires

## 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 17718TEE)
- SST** SmartScan Touch  
(Regular - SS 17700)  
(Teaching - SS 17701)  
(Meeting - SS 17702)
- 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** 1.5mm<sup>2</sup> (CSA) Mains/control lead (3-pole)  
(3m - LCM 18270)  
(4m - LCM 18271)  
(6m - LCM 18272)
- SSL** SmartScan luminaire
- NSL** Non-SmartScan luminaire
- TEE** TEE connector (3-pole) - fitted to back of all SmartScan luminaires
- Mains 3-core (LCM)
- Mains switched 3-core, maximum distance 100m

Maximum 20 SmartScan luminaires (max 5A)

Maximum of 5A total load on SmartScan Hub (fused internally)

Maximum combined system current 5A



## 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.

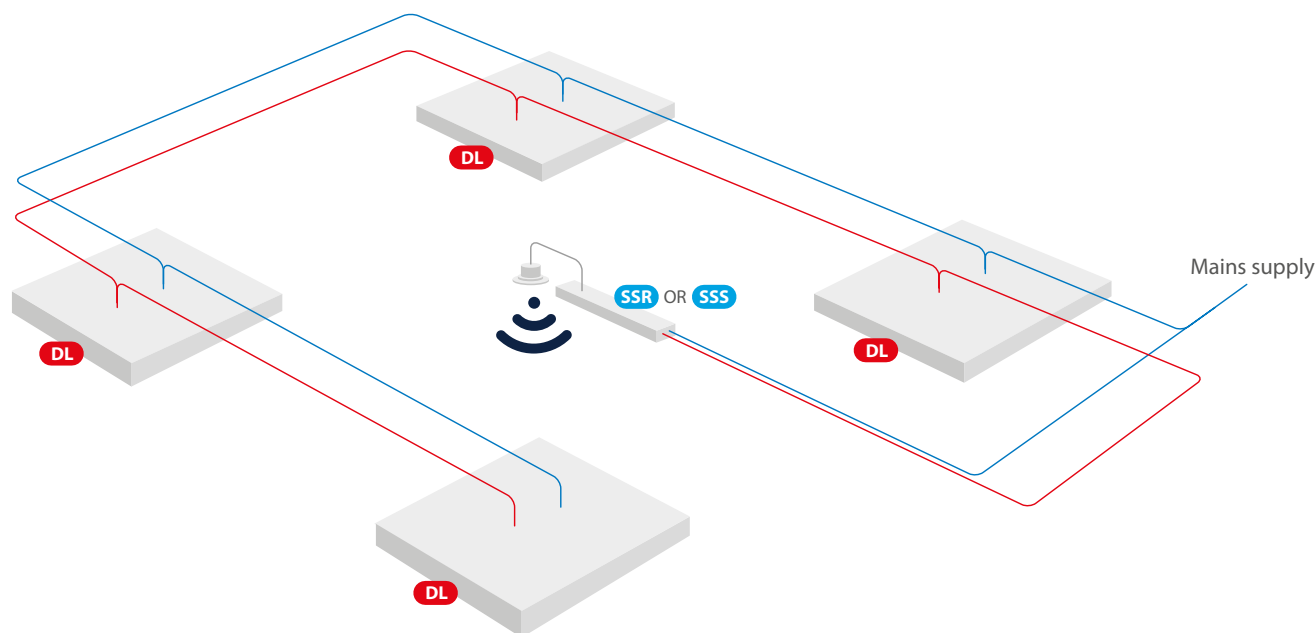
## SUITABLE LUMINAIRES

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.

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



 SmartScan  
**External**



# What is SmartScan External?

**The Thorlux SmartScan External System exploits the latest digital technology to provide a simple, effective method of lighting control that minimises energy consumption whilst retaining high levels of user comfort.**

A discrete sensor integral to the luminaire monitors ambient light and presence ensuring that the area is only illuminated when occupied and that the lighting is turned off during daylight hours.

Lighting can account for a high percentage of energy consumed outside a building, especially if uncontrolled discharge luminaires are installed.

Massive energy savings and extended maintenance cycles are possible by combining programmable presence detection and light sensing with LED luminaires. Savings by the installation of automatic lighting control systems often exceed 70%.

The ongoing development of the SmartScan System now allows for the SmartScan External Sensor to be installed in column mounted floodlights, such as the Starbeam, for use in applications up to 10m high.

Luminaires function individually, or can be linked into groups, using a wireless Motionline connection.



# Motionline

**Motionline is a wireless connection between SmartScan External luminaires enabling the creation of control groups. 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. Motionline ensures that there will always be a well lit comfortable environment. Once the last person leaves an area the luminaire waits for a pre-programmed period before dimming and turning off or dimming to a user pre-defined level.**



## WITH MOTIONLINE

With Motionline a group of luminaires can be turned on when any one sensor detects movement.



## WITHOUT MOTIONLINE

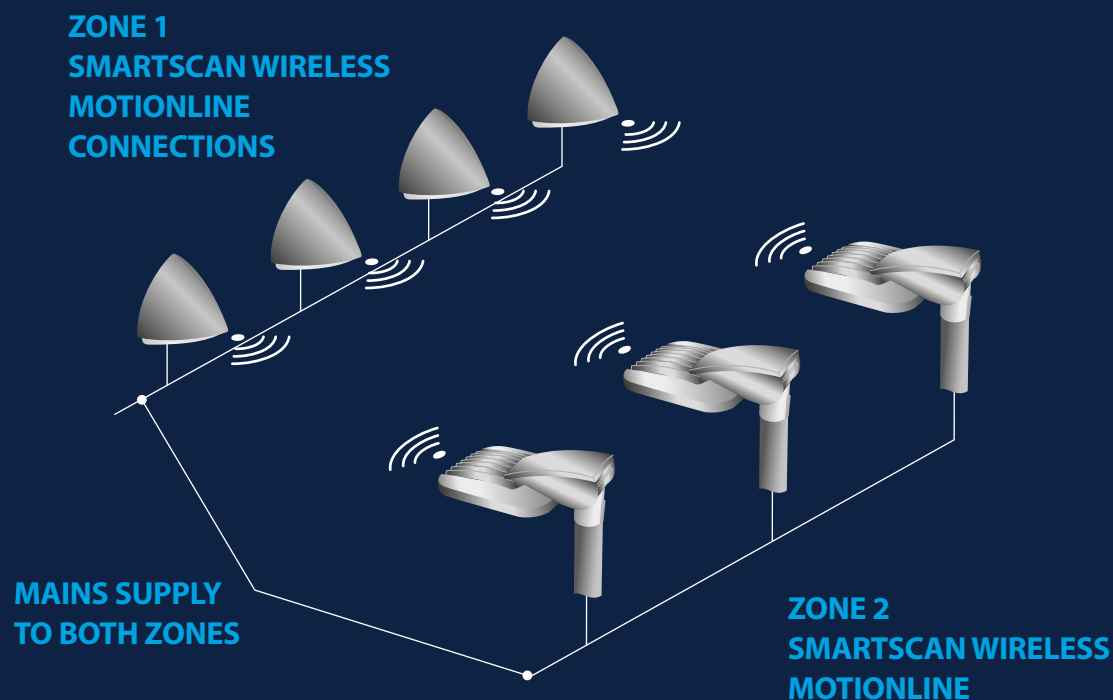
Without Motionline each luminaire will only turn on if a person is within its immediate area.



**Motionline is ideal for locations where groups of luminaires need to be controlled together whilst retaining individual luminaire programmability to suit local requirements.**

Consider a typical application using luminaires around a car park. As a car approaches the car park entrance, only the luminaire closest to the entrance is on, to illuminate the entrance. When its sensor detects movement the remaining car park luminaires respond instantaneously increasing to full brightness.

Another example might be the pedestrian walkway between two buildings, perhaps on a school or university campus, lit by Realtas on the walls and Starbeam luminaires along the footpath. As a person leaves one building all of the luminaires along the route which had been lit at a reduced level increase to full brightness.



# SmartScan External Presence Detection Guide



## PRESENCE DETECTION OF THE SENSOR

SmartScan External is suitable for mounting heights up to 10m.

## MOTIONLINE

SmartScan External luminaires utilise a wireless mesh network to form Motionline groups. This ensures effective group control and extends presence detection coverage.

## 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 SENSORS

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





# SmartScan External Sensor Mounting Heights up to 10m

**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.**

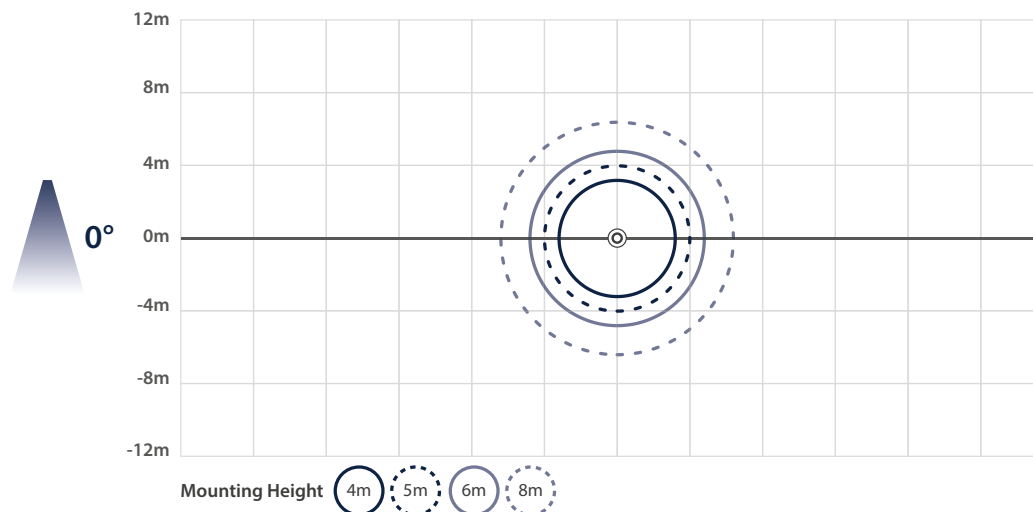
In areas where trees or bushes are present please ensure that any foliage is trimmed back behind the luminaire to ensure optimal movement detection and lighting efficiency.

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.

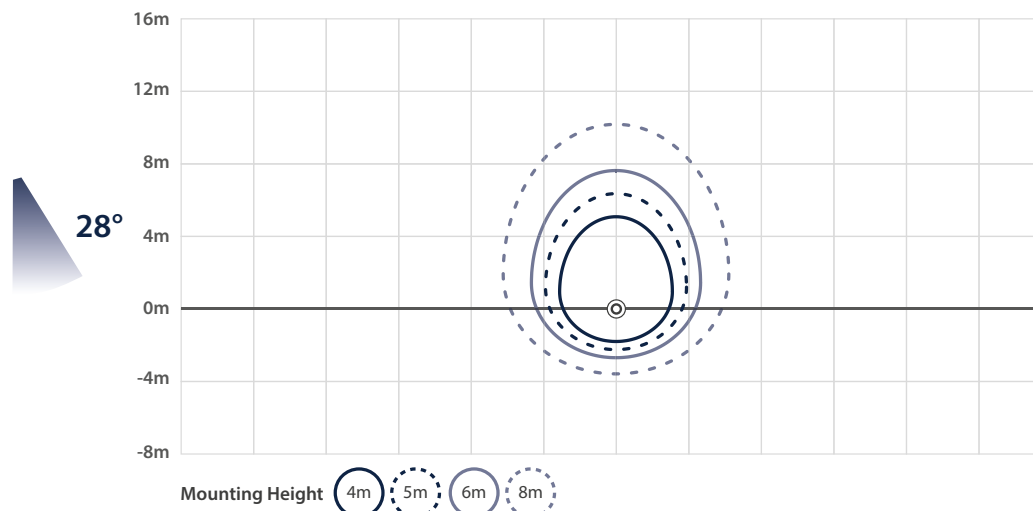
## ANGLE OF THE SENSOR

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 Smart External luminaires are designed for use in canopies and therefore the sensor is directed vertically towards the floor.

SmartScan External Sensor - Detection Area - 0°



SmartScan External Sensor - Detection Area - 28°





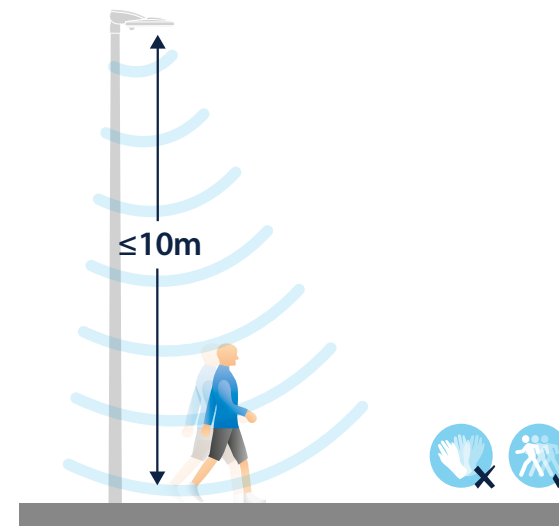
## AMBIENT TEMPERATURE

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.



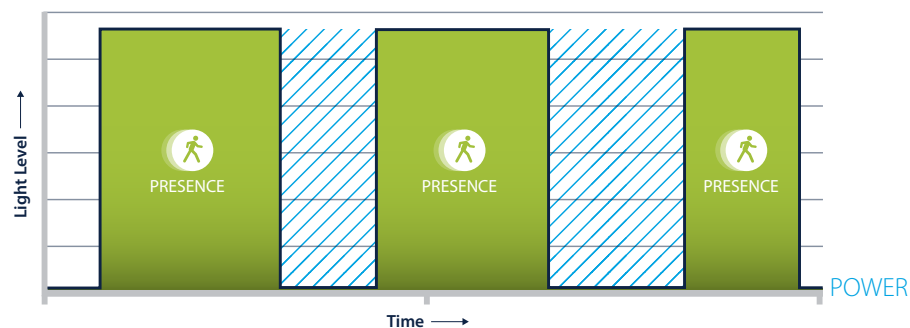




# Energy Saving with SmartScan External

## PRESENCE DETECTION

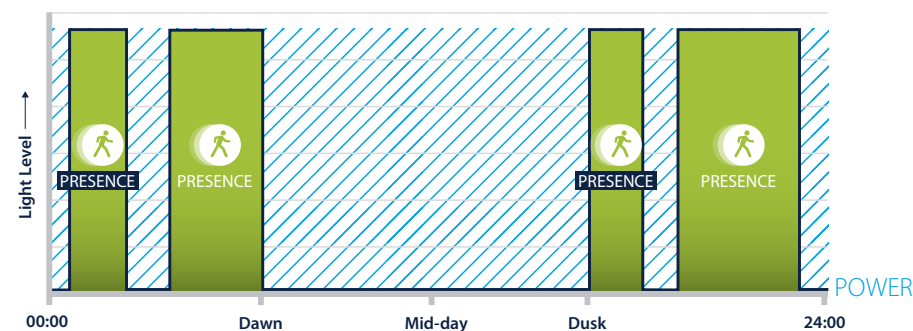
Passive Infra-Red (PIR) sensors are used to detect movement to turn the luminaires on. After a predetermined time of no movement the luminaires will turn off, saving energy.



## PHOTOCELL CONTROL

The SmartScan External Sensor incorporates an ambient light sensor which will enable at dusk and disable at dawn. The luminaire will remain off until movement is detected.

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



 LIGHTING FROM LUMINAIRES
  ENERGY SAVED

Timed override control is also available via the SmartScan website. See page 70 for more details.



 SmartScan  
**Radar**



# What is SmartScan Radar?

**SmartScan Radar extends the award winning SmartScan range of lighting controls. Using the latest high frequency sensor technology SmartScan Radar is mounted directly to the LED light engine, integral to the luminaire and is designed for applications where the luminaire aesthetics and impact rating are important factors.**

Thorlux can offer a wide range of luminaires with SmartScan Radar technology built into the LED light engine, for use in a wide variety of applications.

SmartScan Radar offers energy saving through presence detection and daylight control, user control via SmartScan scene setting or timed override from the SmartScan website.

## BENEFITS

- Radar presence detectors are integral to the luminaire, providing improved impact resistance and aesthetics.
- Unique 24GHz sensor with increased sensitivity to small movements whilst being less prone to false detection than traditional 'microwave' technology.
- Fully programmable light levels, detection range (sensitivity), time delays and security levels via the SmartScan Programmer.
- New advanced SmartScan technology allows photocell control with the LED lamp on or off.
- Full status monitoring via the SmartScan website.
- Automatic testing and record keeping of emergency luminaires via the SmartScan website.



# Motionline



**Motionline is a wireless connection between SmartScan luminaires enabling the creation of control groups. 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. Motionline ensures that there will always be a well-lit comfortable environment. Once the last person leaves an area the luminaire waits for a pre-programmed period before dimming and turning off or dimming to a user pre-defined level.**



## WITH MOTIONLINE

With Motionline a group of luminaires can be turned on when any one sensor detects movement.



## WITHOUT MOTIONLINE

Without Motionline each luminaire will only turn on if a person is within its immediate area.



# SmartScan Radar Presence Detection Mounting Heights up to 4m

**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.

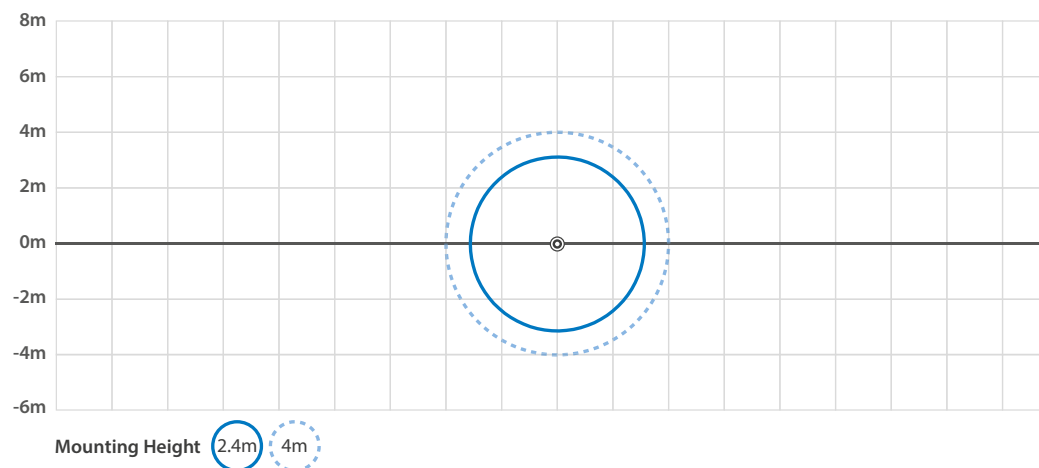
## MOTIONLINE

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. 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.

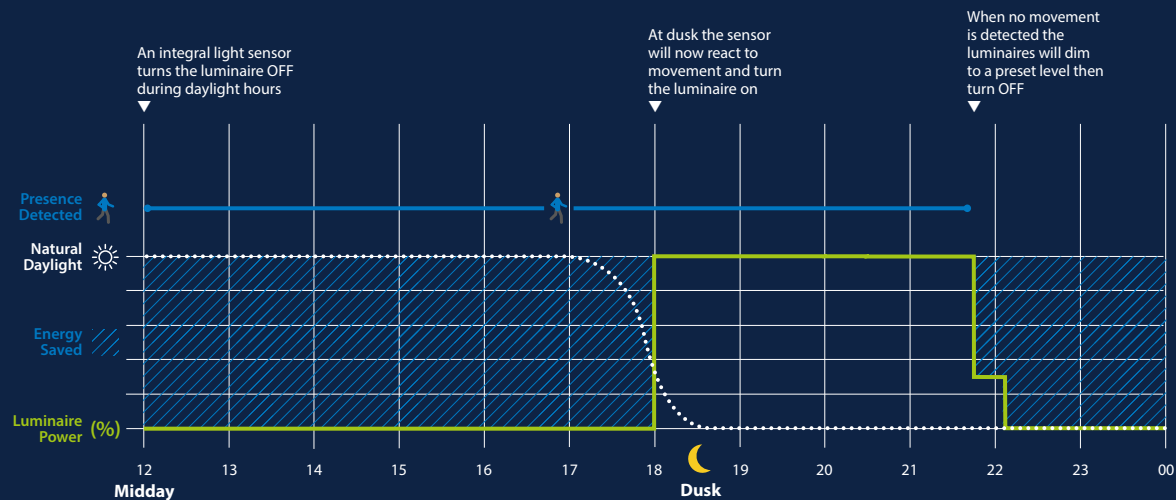
**Radar Sensor - Detection Area**



# Daylight Control

The SmartScan Radar sensor has a built in photocell that ensures the luminaire remains off when daylight is present. The switching threshold can be set using the SmartScan Programmer to ensure correct operation in a variety of applications.

Unlike traditional microwave sensors the SmartScan Radar sensor can measure daylight ingress with the lamp on or off.







 SmartScan

# Emergency



# Legislation Compliance

## WHY TEST AND MAINTAIN EMERGENCY LIGHTING?

Building owners, employers or responsible persons are legally bound to record the regular testing, inspection and maintenance of their emergency lighting system.

### 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 ISO 7010:2012+A7:2017
- 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).

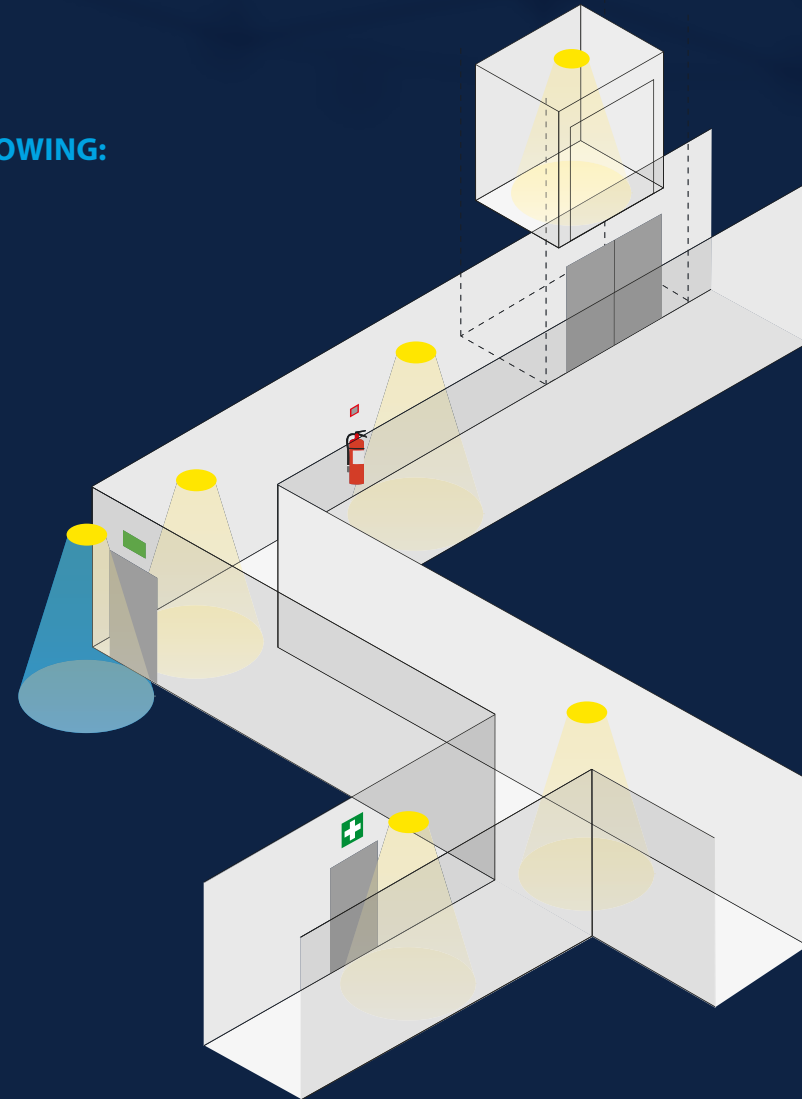
BS EN 62034:2012 is the European Standard for Automatic Test Systems for Battery Powered Emergency Escape Lighting. One of the main requirements is that the device must be self-monitoring and that it checks all tests are being performed at specified intervals.

# 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 8m<sup>2</sup> 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

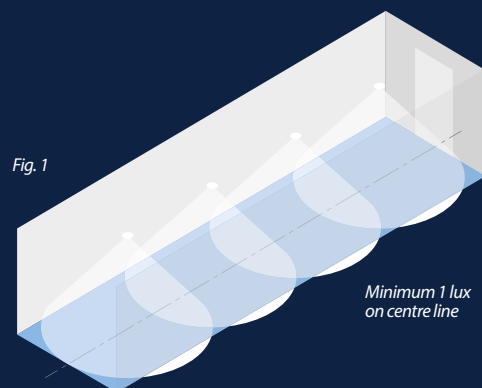
The Regulatory Reform Order (Fire Safety) states that consultation between the owner/developer and/or occupier of a premises, the architect, the lighting engineer, the contractor and enforcing authorities should be arranged at a very early stage to define how relevant standards shall be applied and to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



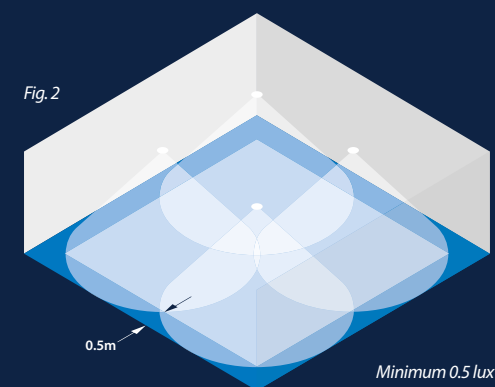
## ESCAPE ROUTE LIGHTING

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 60m<sup>2</sup> 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.

From: **SmartScan**

Subject: System Status Report



# What is SmartScan 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 somebody 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 the need to be present for the testing process and in its simplest form all that is required is to observe the status indicator to see if the luminaire has failed a test.



## **SMARTSCAN INCORPORATES AN EMERGENCY LIGHTING SYSTEM WITH CENTRALISED 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 & 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 either using the Programmer, or the keypad on the Gateway.

### **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.

