SmartScan

Lighting Management & Emergency Monitoring

SmartScan is a revolutionary wireless lighting management system that allows users to monitor their energy performance data and complete operational information for all SmartScan standard and emergency luminaires.
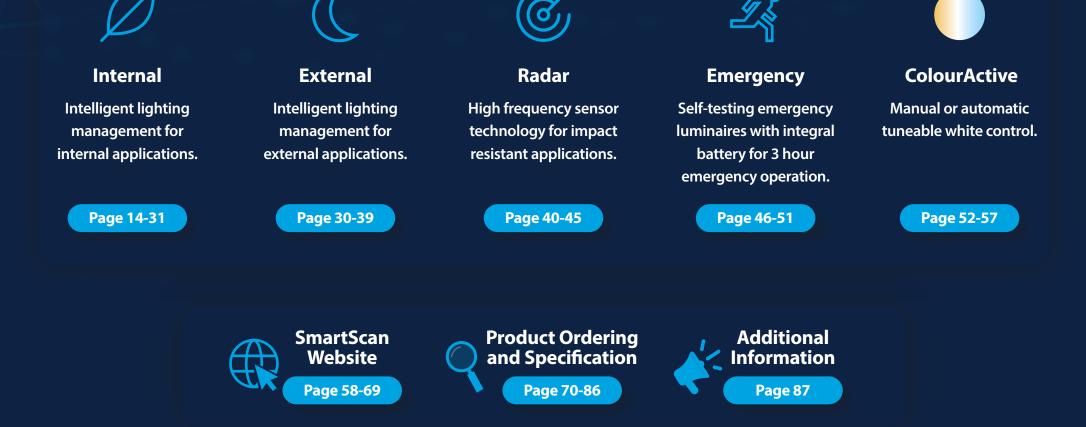
Information is displayed on the SmartScan website which can be accessed from anywhere using a computer, laptop, tablet or smartphone.

The clear graphical user interface provides an overview of the whole site, through to the performance and operation of an individual luminaire.

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2019

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

SmartScan

Internal

Intelligent lighting management for internal applications.

External

Intelligent lighting management for external applications.

Radar

High frequency sensor technology for impact resistant applications.

Emergency

Self-testing emergency luminaires with integral battery for 3 hour emergency operation.

ColourActive

Manual or automatic tuneable white control.

SmartScan Website

Product Ordering and Specification

Additional Information

Why Do We Need Light Controls?

The world's ever increasing demand for energy is rapidly changing our environment and the need for energy efficiency in every aspect of our daily lives has never been greater.

Lighting accounts for approximately one fifth of the world's total electricity consumption. In business, luminaires are regularly switched on at the start of the working day and remain switched on until the last person leaves regardless of how often that space has been occupied throughout the day or how much natural light is present.

Saving energy is easy:

- Design the lighting scheme in accordance with standards using the best available technology.

- Ensure the luminaires have precise optical control to deliver the illumination where it is needed.

- Optimise energy savings by fitting remotely mounted lighting controls, or selecting "SmartScan" luminaires with inbuilt energy saving technology.

- Thorlux energy saving lighting control systems make the most of maintained illuminance, daylight dimming and presence detection (explained further in this section) to ensure optimum energy savings, often measured in real applications to exceed 70%.

SAVE ENERGY, SAVE MONEY, SAVE THE ENVIRONMENT

Energy Saving Controls

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.

MOVEMENT DETECTION

Presence sensors in all luminaires ensure excellent detection coverage, so that SmartScan luminaires switch on when movement is detected and stay on whilst the space is being used.

MAINTAINED ILLUMINANCE

SmartScan luminaires maintain the desired lighting level throughout the maintenance cycle by automatically increasing LED output as the light source ages, avoiding over lighting new installations.

DAYLIGHT DIMMING

When daylight enters an area the SmartScan sensors will take this light into account and gradually dim the LEDs, saving energy whilst maintaining the required light level.
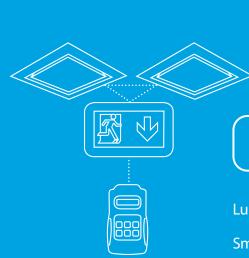
PHOTOCELL CONTROL

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

SAVINGS BY THE INSTALLATION OF AUTOMATIC LIGHTING CONTROL SYSTEMS OFTEN EXCEED 70%.

SmartScan
Overview

What is SmartScan?

SmartScan is available in two platforms:
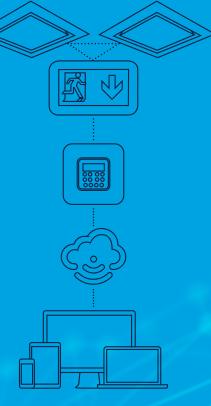
Platform 1

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.

Platform 2

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

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

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.

Standard Smart Sensor

SmartScan Wireless Transceiver

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.
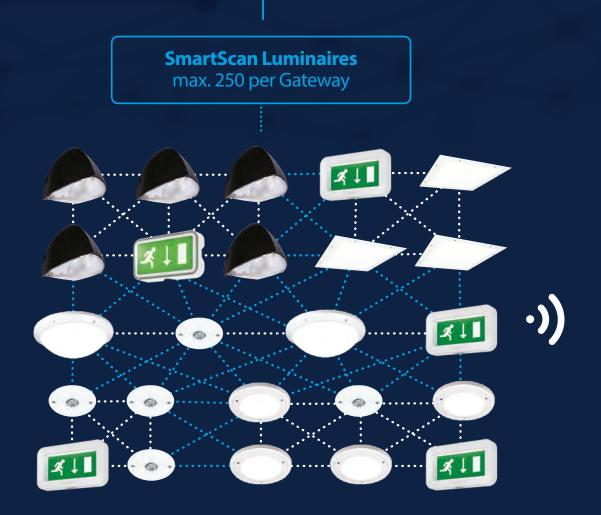
Device Address

Individual luminaires within each group can be given a unique address to provide identification.
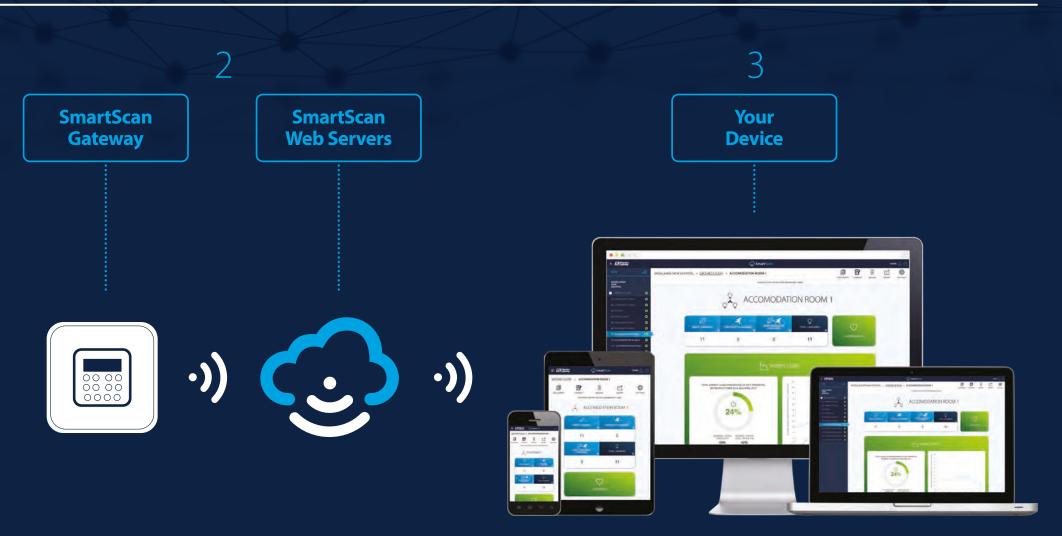
SmartScan [Platform 2] How Does it Work?

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.

1

SmartScan Luminaires
max. 250 per Gateway

2

3

SmartScan Gateway

SmartScan Web Servers

Your Device

SmartScan Internal

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.
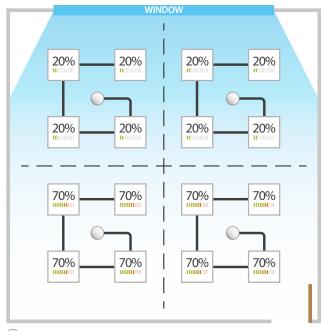
DAYLIGHT LINKING WITH THE SMARTSCAN STAND-ALONE SENSOR

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.
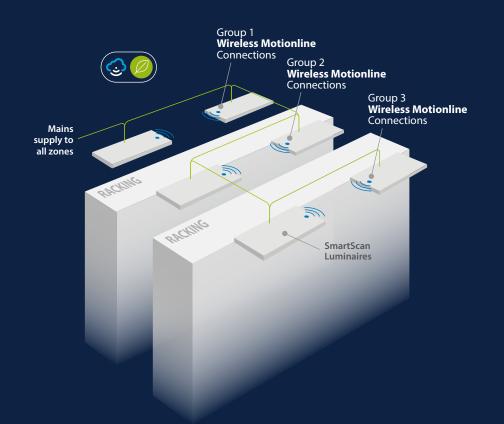
SmartScan Sensor in every luminaire

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.

Group 1
Wireless Motionline Connections

Group 2
Wireless Motionline Connections

Group 3
Wireless Motionline Connections

Mains supply to all zones

RACKING

RACKING

SmartScan 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.

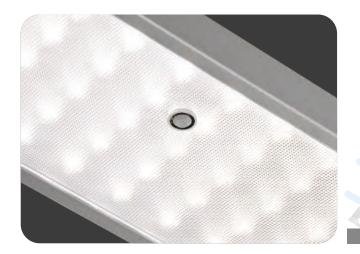# Standard Sensor Mounting Heights up to 8m

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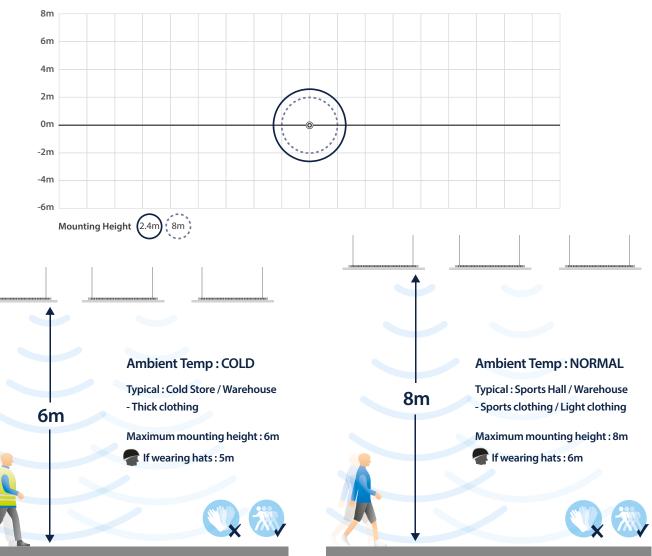
In low temperature applications personnel often wear insulating clothing. This can reduce the thermal image presented to the sensor reducing its effectiveness.

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

Mounting Height 2.4m 8m

Ambient Temp : COLD

Typical : Cold Store / Warehouse
- Thick clothing

Maximum mounting height : 6m

If wearing hats : 5m

6m

Ambient Temp : NORMAL

Typical : Sports Hall / Warehouse
- Sports clothing / Light clothing

Maximum mounting height : 8m

If wearing hats : 6m

8m

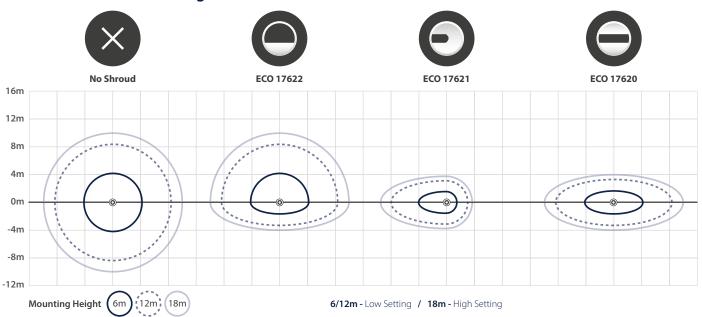# High Level Sensor Mounting Heights up to 18m

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.

High Level SmartScan Sensor - Detection Area

| No Shroud | ECO 17622 | ECO 17621 | ECO 17620 |

Mounting Height 6m 12m 18m   6/12m - Low Setting / 18m - High Setting

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.

< 12 m

12-18 m

16m

Ambient Temp : COLD

Typical : Warehouse
- Thick clothing

Maximum mounting height : 16m

If wearing hats : 14m

18m

Ambient Temp : NORMAL

Typical : Sports Hall / Warehouse
- Sports clothing / Light clothing

Maximum mounting height : 18m

If wearing hats : 16m

Energy Saving with SmartScan Internal

MAINTAINED ILLUMINANCE
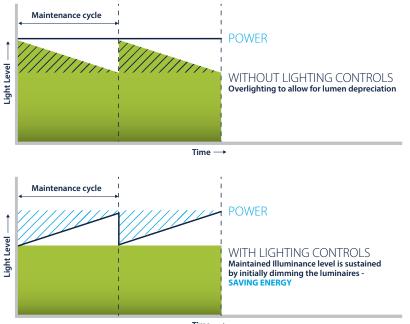
The accumulation of dirt and lumen depreciation cause light loss and uncontrolled schemes are initially overlit to compensate. This results in excessive energy consumption over the maintenance cycle.
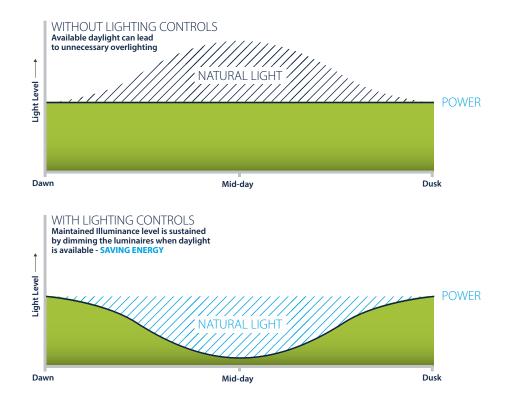
The SmartScan lighting management system allows luminaires to be dimmed to the required lighting level therefore avoiding over lighting and reducing energy consumption. This initial lighting level is sustained throughout the maintenance cycle by gradually increasing power, thereby maintaining the correct lumen output.

Maintenance cycle

Light Level →

POWER

WITHOUT LIGHTING CONTROLS
Overlighting to allow for lumen depreciation

Time →

Maintenance cycle

Light Level →

POWER

WITH LIGHTING CONTROLS
Maintained Illuminance level is sustained by initially dimming the luminaires -
SAVING ENERGY

Time →

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).

WITHOUT LIGHTING CONTROLS
Available daylight can lead to unnecessary overlighting

NATURAL LIGHT

Light Level →

POWER

Dawn | Mid-day | Dusk

WITH LIGHTING CONTROLS
Maintained Illuminance level is sustained by dimming the luminaires when daylight is available - SAVING ENERGY

Light Level →

NATURAL LIGHT

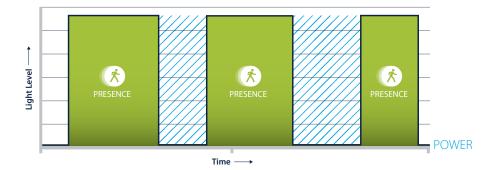POWER

Dawn | Mid-day | Dusk
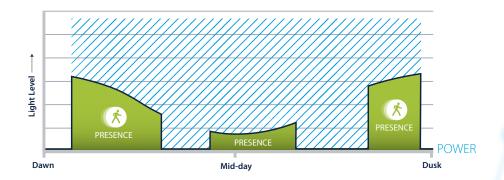
PRESENCE DETECTION

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 increase.

SmartScan Wireless Switch Module

The SmartScan Wireless Switch Module 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

Normally open retractive switch (Push to make)

| COM |
| COM |
| MAX |
| ECO |
| SC3 |
| SC2 |
| SC1 |

On/Off/Dimming Control

Two way - centre off retractive switch

| COM |
| COM |
| MAX |
| ECO |
| SC3 |
| SC2 |
| SC1 |

Classroom On/Off/Dimming Control with Whiteboard Scene

Normally open retractive switch for whiteboard control (push to make)

Two way - centre off retractive switch

| COM |
| COM |
| MAX |
| ECO |
| SC3 |
| SC2 |
| SC1 |

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
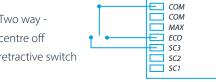Scene 3: User defined lamp or light level

See page17 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.
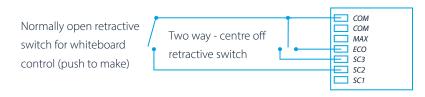
The Thorlux Smart Remote can be used to control individual luminaires. It provides full control with on, off, dim and brighten features. The Smart Remote is supplied with a unique, robust wall mounting bracket. A locking key kit ECO 9724 is available if required.

Insert key to unlock

Remove key to lock

Scene Control

SmartScan Touch 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.

A scene command 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 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.

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

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

Download on the App Store

GET IT ON Google Play

Wireless communications are disabled, therefore the SmartScan Touch must be commissioned before use.

Mains Powered

Battery Powered

Smart Scene Handset options

regular

teaching

meeting

1 Scene 1

2 Scene 2
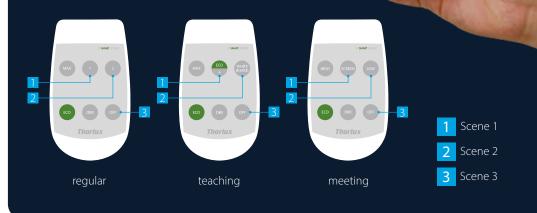
3 Scene 3

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
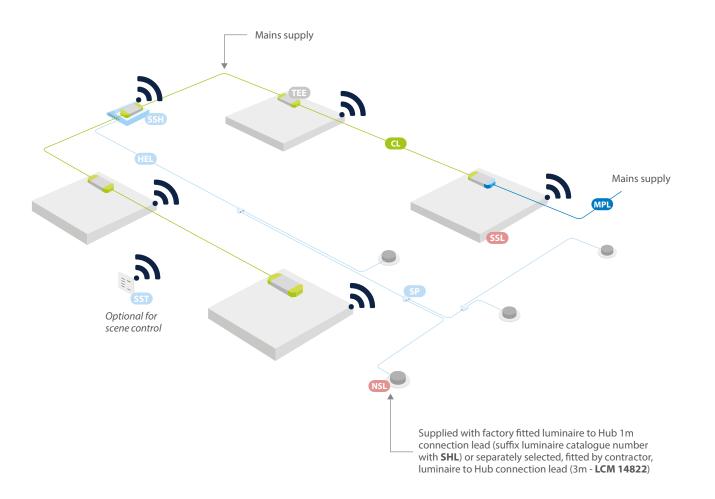

SmartScan Stand-alone Sensor

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.

Mains supply

Mains supply

Optional for scene control

Supplied with factory fitted luminaire to Hub 1m connection lead (suffix luminaire catalogue number with **SHL**) or separately selected, fitted by contractor, luminaire to Hub connection lead (3m - **LCM 14822**)

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   **1.5mm² (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.
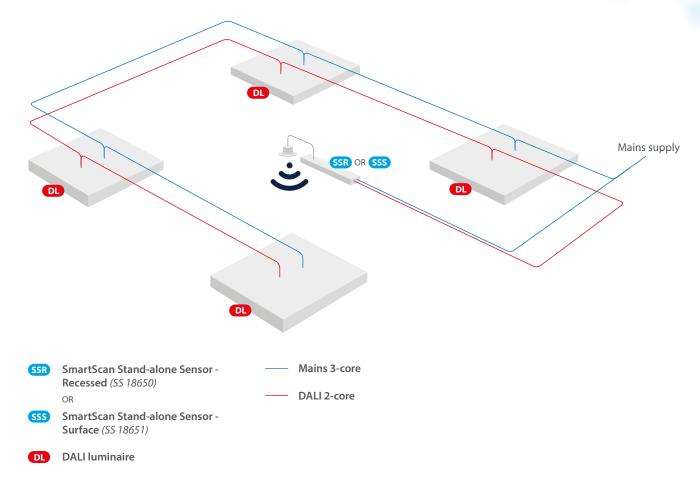
SUITABLE LUMINAIRES

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.

Mains supply

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.
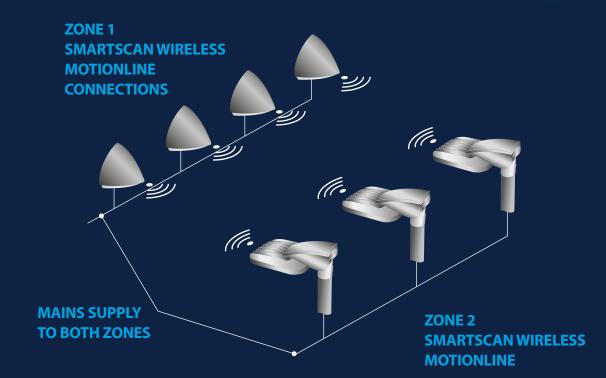

WITHOUT MOTIONLINE

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.

**ZONE 1
SMARTSCAN WIRELESS
MOTIONLINE
CONNECTIONS**

**MAINS SUPPLY
TO BOTH ZONES**

**ZONE 2
SMARTSCAN WIRELESS
MOTIONLINE**

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.

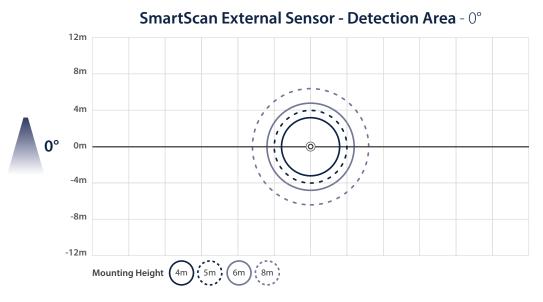# SmartScan External Sensor Mounting Heights up to 10m

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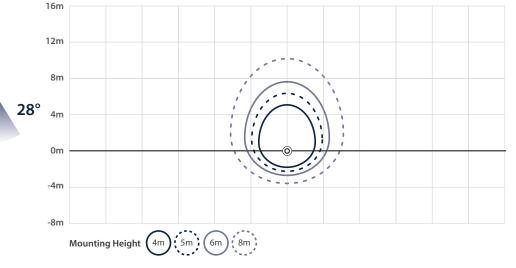
SmartScan External uses a passive infra-red (PIR) movement sensor built into each luminaire. Infra-red technology is commonly used for lighting control, but when used externally a number of factors are increasingly important.

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°

0°

Mounting Height 4m 5m 6m 8m

SmartScan External Sensor - Detection Area - 28°

28°

Mounting Height 4m 5m 6m 8m
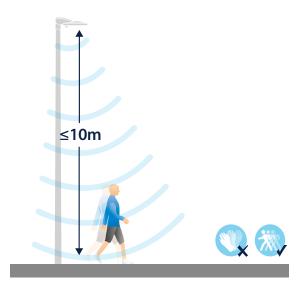
AMBIENT TEMPERATURE

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.

≤10m

www.thorlux.com/smartscan
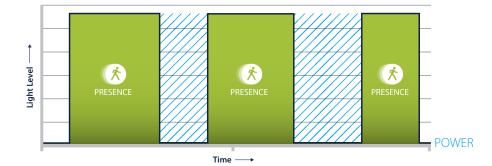
Energy Saving with SmartScan External
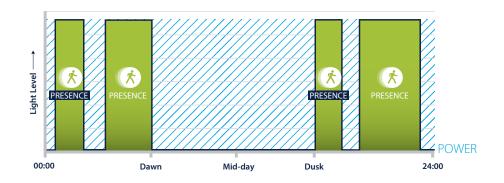
PRESENCE DETECTION

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.

Light Level

PRESENCE PRESENCE PRESENCE

POWER

Time

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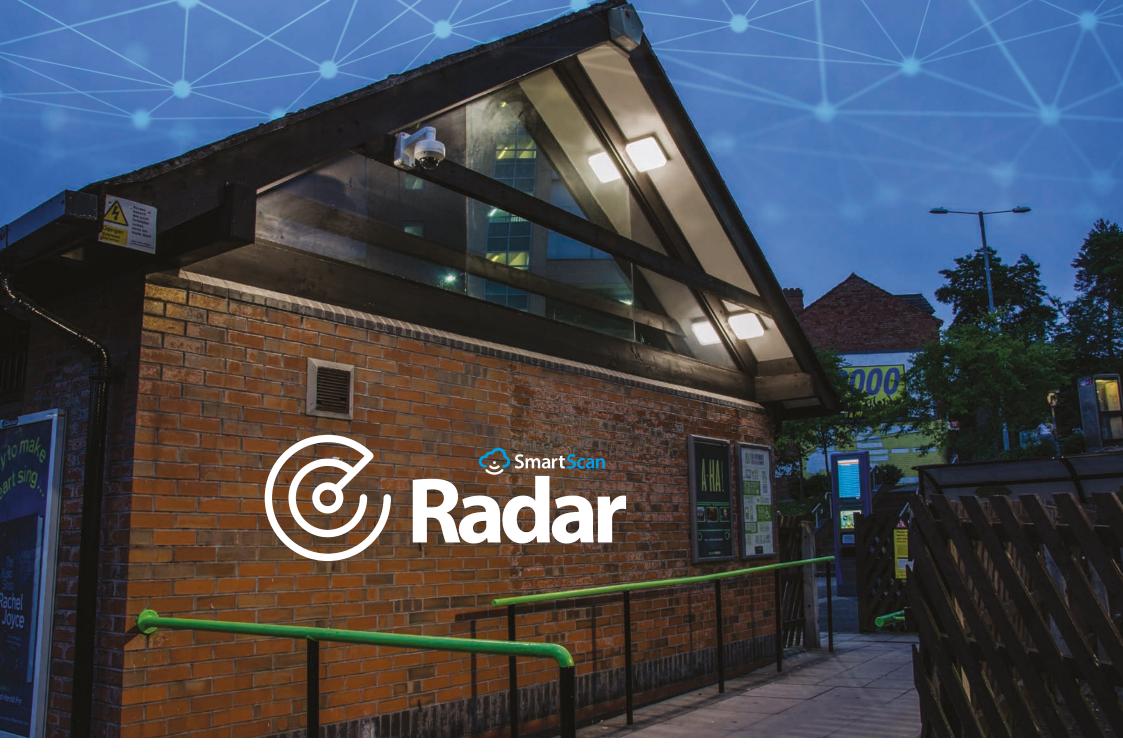
Ambient light level switching can be adjusted using the SmartScan External Programmer.

Light Level

PRESENCE PRESENCE PRESENCE PRESENCE

POWER

00:00   Dawn   Mid-day   Dusk   24:00

LIGHTING FROM LUMINAIRES   **ENERGY SAVED**

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

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.
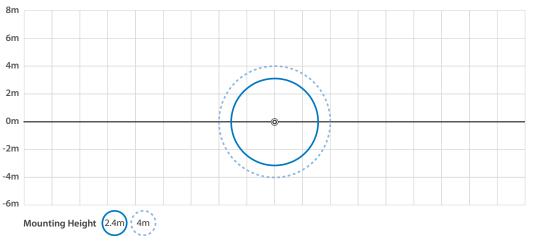
MOTIONLINE

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 (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.
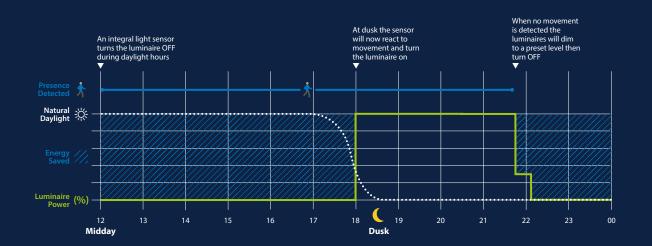
Radar Sensor - Detection Area

Mounting Height: 2.4m, 4m

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.

An integral light sensor turns the luminaire OFF during daylight hours

At dusk the sensor will now react to movement and turn the luminaire on

When no movement is detected the luminaires will dim to a preset level then turn OFF

Presence Detected

Natural Daylight

Energy Saved

Luminaire Power (%)

12 Midday   13   14   15   16   17   18 Dusk   19   20   21   22   23   00

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 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**
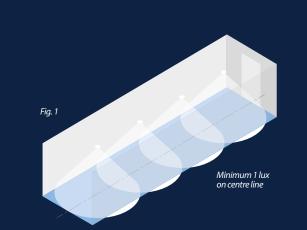
CONSULTATION AND RISK ASSESSMENT

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.
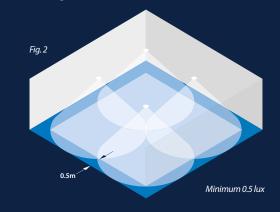

ESCAPE ROUTE LIGHTING

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).

Fig. 1

Minimum 1 lux on centre line

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).

Fig. 2

0.5m

Minimum 0.5 lux

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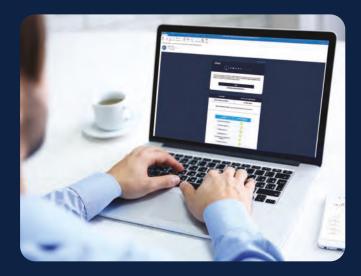
If a fault is indicated, it needs to be rectified, and to comply with standards, the unit must be re-tested to ensure correct operation and that the fault indication has cleared. Tests can be performed either using the Programmer, or the keypad on the Gateway.

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.

SmartScan

ColourActive

3000°K   6500°K

www.thorlux.com/smartscan

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.
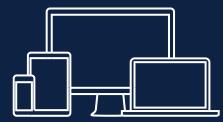
Manual control is provided by a range of wall mounted touch sensitive plates and smartphone apps.

Methods of Control

OPTION 1. TIME SCHEDULE CONTROL
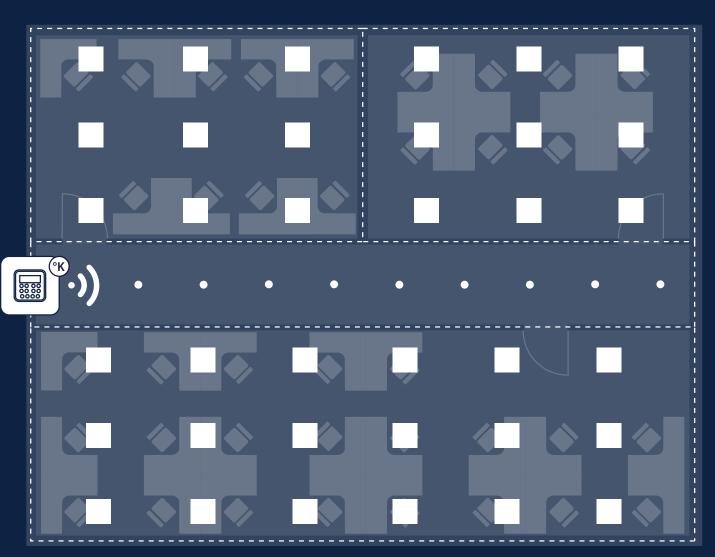
A ColourActive Gateway wirelessly provides building wide colour temperature control of ColourActive luminaires. The time schedule is configured via the Thorlux SmartScan website.

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
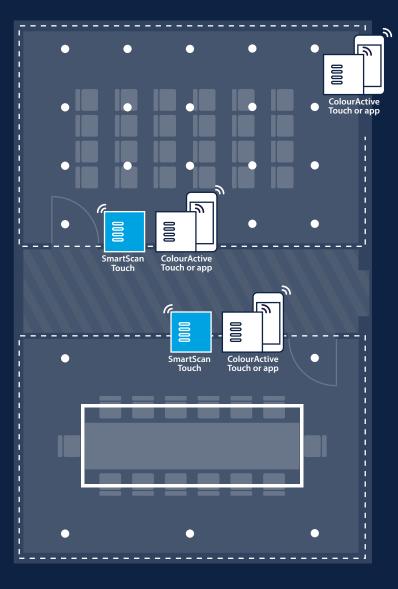
Ideal for small offices, meeting and conference rooms.

**Colour temperatures are set by the user with the ColourActive Touch or the ColourActive app.**

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

Multiple ColourActive Touch or SmartScan Touch plates can be fitted in each area for added convenience.

ColourActive
Touch or app

SmartScan
Touch

ColourActive
Touch or app

SmartScan
Touch

ColourActive
Touch or app

OPTIONS 1 AND 2 COMBINED. AUTOMATIC AND MANUAL CONTROLS

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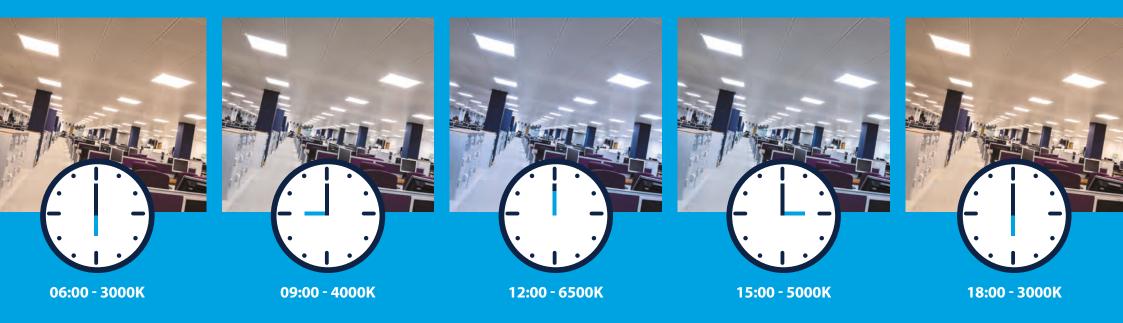
Automatic and manual controls can be combined to provide maximum flexibility and convenience.

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.
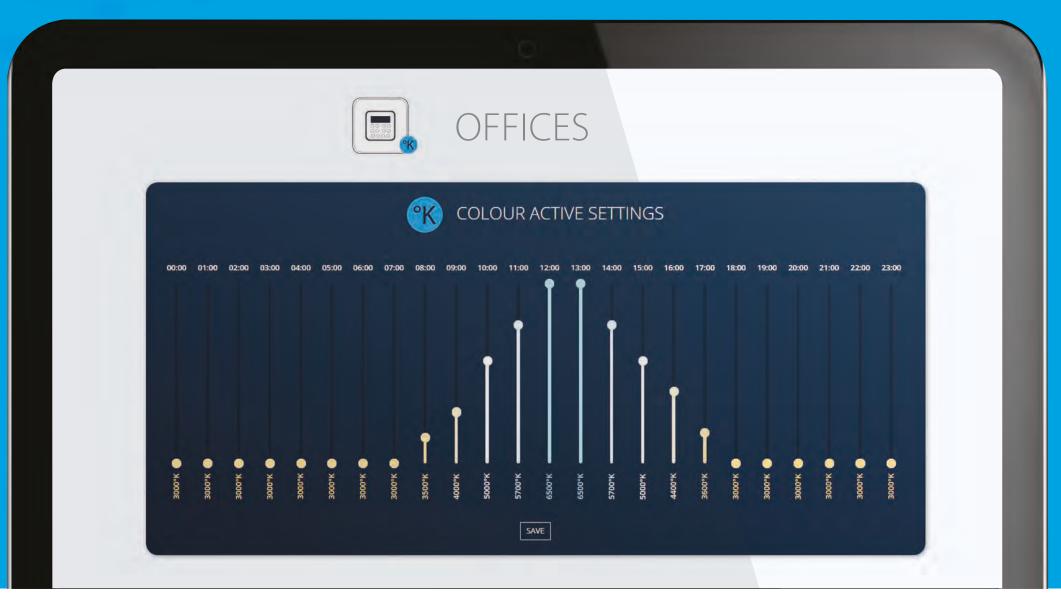
How Does ColourActive Automatic Control Work?

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

°K 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
3000°K	3000°K	3000°K	3000°K	3000°K	3000°K	3000°K	3000°K	3500°K	4000°K	5000°K	5700°K	6500°K	6500°K	5700°K	5000°K	4400°K	3600°K	3000°K	3000°K	3000°K	3000°K	3000°K	3000°K

SAVE

SmartScan
Website

Website Features

Delivers full energy performance reports.

Provides emergency lighting status information.

Provides SmartScan luminaire status information.

Management of emergency lighting testing dates/times.

Management of external lighting switching times.

Provides occupancy profiling information.

Provides air quality information.

Management of ColourActive regime.

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.

smartscan.lighting

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

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

**SMARTSCAN
STATUS REPORTING**

**SMARTSCAN EMERGENCY
STATUS REPORTING**

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 now 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.

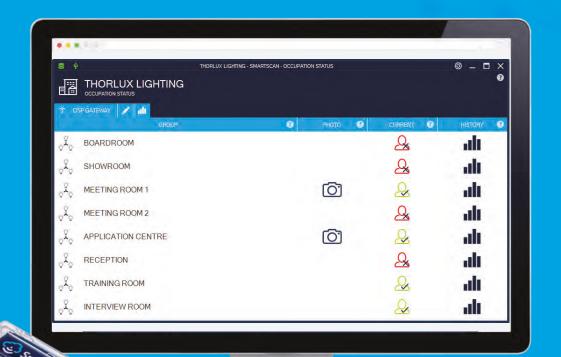**HISTORIC**

OCCUPANCY PROFILING

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

OCCUPANCY PROFILING

In certain applications live occupancy profiling may be required. For example, a receptionist or PA may need to know whether the board, conference or meeting rooms are occupied or vacant.

SmartScan Live Profiling allows a number of groups of luminaires to be monitored in real time, with live occupancy status displayed on a laptop or PC screen.

By using the SmartScan Occupancy Profiling software in conjunction with a SmartScan Dongle, it is possible to monitor a room's status in real time. The dongle monitors occupancy signals on the SmartScan mesh network and updates the status display instantly.

KEY FEATURES

- **Up to 15 groups per network can be monitored**

- **More than one live profile setup may be installed on the same network to allow monitoring by multiple users**

Note: When Occupancy Profiling is enabled (live or historic) a maximum of 250 luminaires can be connected to the Gateway.

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.

CO_2 CARBON DIOXIDE

CO_2 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 CO_2 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 CO_2.

SMARTSCAN AIR QUALITY SENSOR

The SmartScan Air Quality Sensor monitors three key parameters: Temperature, CO_2 and Relative Humidity.

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	CO₂
INACTIVE 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%	

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 grey (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 CO_2 levels are displayed with colour-coded shading. The information table displays the exact values for each sensor at any given time.
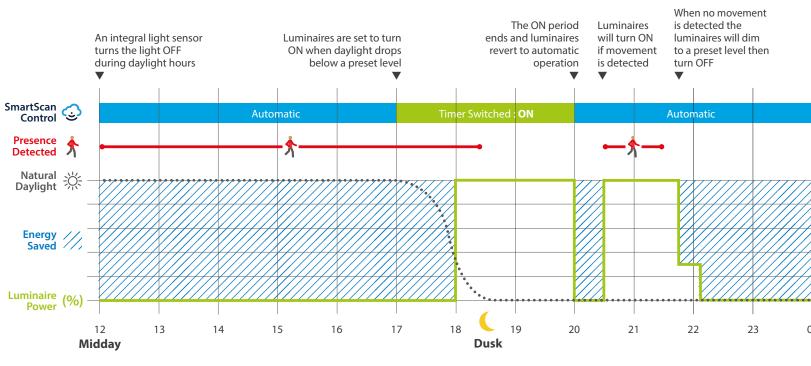
SmartScan External Lighting Time Control

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.

An integral light sensor turns the light OFF during daylight hours ▼

Luminaires are set to turn ON when daylight drops below a preset level ▼

The ON period ends and luminaires revert to automatic operation ▼

Luminaires will turn ON if movement is detected ▼

When no movement is detected the luminaires will dim to a preset level then turn OFF ▼

| SmartScan Control | Automatic | Timer Switched : ON | Automatic |

Presence Detected

Natural Daylight

Energy Saved

Luminaire Power (%)

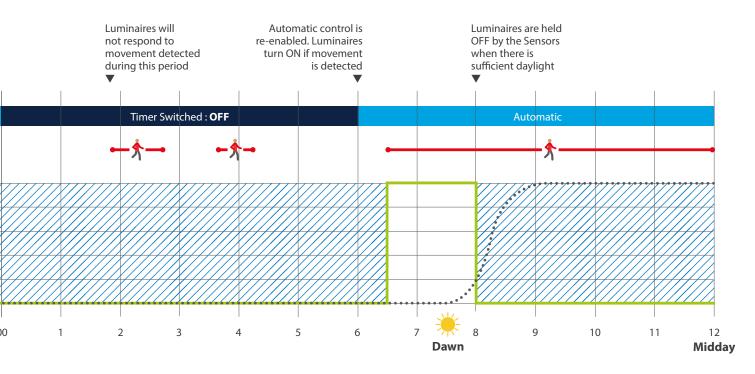12 — Midday 13 14 15 16 17 18 — Dusk 19 20 21 22 23 0

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.

Luminaires will not respond to movement detected during this period
▼

Automatic control is re-enabled. Luminaires turn ON if movement is detected
▼

Luminaires are held OFF by the Sensors when there is sufficient daylight
▼

Timer Switched : **OFF**

Automatic

| 00 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

Dawn

Midday

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**

SmartScan Internal or External luminaires utilise the factory fitted SmartScan Wireless Transceiver addition to the Smart Sensor.

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

E.g. **RL 19069SS**

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

④

⑤

⑥

SmartScan Internal or External luminaires combined with integral SmartScan Emergency

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

To specify SmartScan Internal or External 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.

Dedicated SmartScan Emergency luminaires

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

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

E.g. **WLX 17463**

5 YEAR BATTERY WARRANTY

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

SmartScan ColourActive luminaires

SmartScan ColourActive luminaires utilise the factory fitted SmartScan Wireless Transceiver addition to the Smart 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**

SmartScan Radar luminaires

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

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

E.g. **PS 17312R**

A list of SmartScan Radar compatible luminaires can be found here: www.thorlux.com/smartscan-radar

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 handset.

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 and DSI 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 an 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 to a website for users to view in a graphical format.

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 an infra-red programming device.

'Touch' scene control

Sensors shall be capable of responding to scene controls from a wall-mounted touch sensitive control plate or a hand-held remote controller. Each sensor shall be individually programmed and reconfigurable for each scene. 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.

Scene control plates shall be of the capacitive sensing type. Each function shall have a status LED that will display the current system status. Scene plates shall be printed to suit the application, and matching infra-red remote controllers shall also be available. Remote controllers should be supplied with wall brackets and optional locking mechanisms.

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 should automatically revert to 'ECO' energy saving mode.

Addition of non-intelligent 'slave' luminaires

The system shall be capable of switching non-intelligent 'slave' 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/ECO) 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 and air quality information. 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.

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 touch sensitive control plate or a smartphone app, available for both iOS and Android operating systems. The touch sensitive 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 carbon offset via a quantifiable carbon offsetting scheme and shall include emissions from the lighting manufacturer's vehicles used for delivery and other project associated mileage.

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

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.
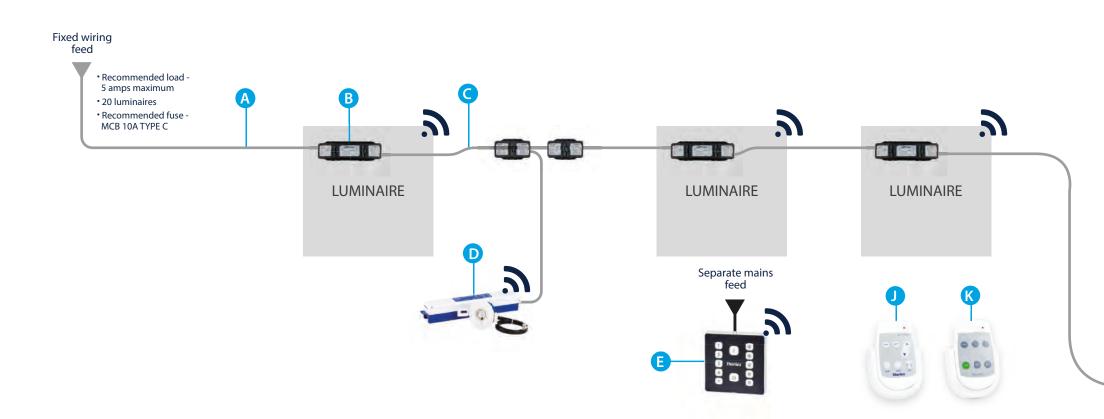

SmartScan - 3-pole

Permanent Live (L)

⏚

Neutral

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
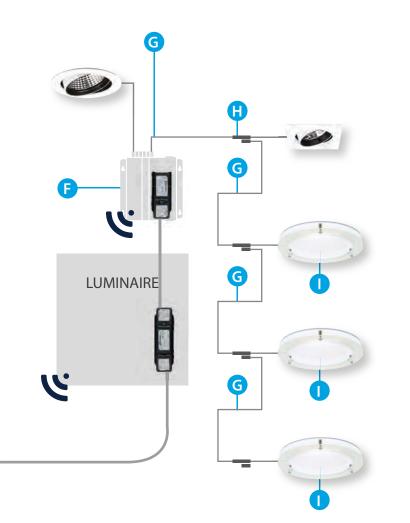- Compliance with new standard BS EN 61535:2013

TWIN LATCH DESIGN - STRONG STRAIN RELIEF

CONSTRUCTED FROM FLAME RETARDANT NYLON

LS0H - 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

D

LUMINAIRE

LUMINAIRE

LUMINAIRE

Separate mains
feed

E

J

K

LUMINAIRE

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 Touch - **Battery**	SS 20212	0.8
E	SmartScan Touch - **Mains**	SS 20213	0.8
F	SmartScan Hub (Modular Wiring Type)	SS 17718TEE	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	Smart-Remote infra-red handset	LCM 13479B	0.08
K	Smart Scene handset - **Regular**	LCM 14816	0.08
K	Smart Scene handset - **Teaching**	LCM 14817	0.08
K	Smart Scene handset - **Meeting**	LCM 14818	0.08

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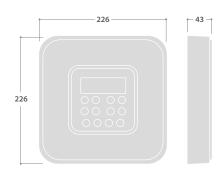
SmartScan Gateway

MASTER CONTROL AND WEB INTERFACE WITH SMARTSCAN WIRELESS COMMUNICATION

IP65 **UKCA** **CE**
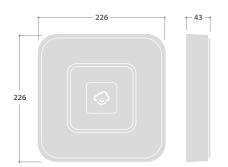
SPECIFICATION

- Polycarbonate body finished white (RAL9016), silicone keypad

- Central control for up to 250 Smart and emergency luminaires. Extra Gateways can be fitted to accommodate more luminaires

- Central control for multiple groups

- Allows user to manually initiate emergency lighting tests

- Password protected

- Communicates with the SmartScan website using GSM mobile telecommunications

- Scheduled test times / dates managed using the SmartScan website

DIMENSIONS

226 | 226 | 43

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Gateway	**SS 17486**	1.0

SmartScan Wireless Standards Compliance:
Europe: EN 300 220-1 V2.4.1 / EN 301 489-3 V1.6.1
Australasia: ACMA 2014 Radio Communication Standard 2014
Thorlux Patented Wireless Technology - GB2575724

SmartScan Gateway Lite

MASTER CONTROL AND WEB INTERFACE WITH SMARTSCAN WIRELESS COMMUNICATION

IP65 **UKCA** **CE**

SPECIFICATION

- Polycarbonate body finished white (RAL9016)

- Central monitoring for up to 50 Smart and emergency luminaires - ideal for smaller projects

- Central time control for SmartScan External luminaires

- Communicates with the SmartScan website using GSM mobile telecommunications

- Scheduled emergency test times / dates managed using the SmartScan website

DIMENSIONS

226 | 226 | 43

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Gateway Lite	**SS19796**	1.0

ColourActive Gateway

RANGE
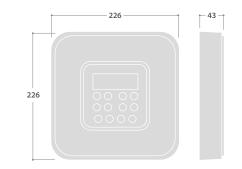
DESCRIPTION	CAT. No.	APPROX. kg
ColourActive Gateway	**SS 18548**	1.0

DIMENSIONS

226   226   43

MASTER COLOUR TEMPERATURE CONTROL AND WEB INTERFACE FOR COLOURACTIVE LUMINAIRES

IP65 UK CA CE

SPECIFICATION

- Polycarbonate body finished white (RAL9016), silicone keypad
- Central control for ColourActive luminaires
- Communicates with the SmartScan website using GSM mobile telecommunications
- Wireless control of incremental shifts in colour temperature governed by settings on the SmartScan website

SmartScan Wireless Standards Compliance:
Europe: EN 300 220-1 V2.4.1 / EN 301 489-3 V1.6.1
Australasia: ACMA 2014 Radio Communication Standard 2014
Thorlux Patented Wireless Technology - GB2575724

A ColourActive Gateway only provides colour temperature control. If energy monitoring and status information feedback is required an additional SmartScan Gateway is required.
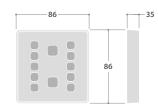
SmartScan Touch

SmartScan Scene

Simple and flexible scene control is provided by the SmartScan Touch wall plate or SmartScan Scene remote control handset.

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Scene handset - **regular**	**LCM 14816**	0.08
SmartScan Scene handset - **teaching**	**LCM 14817**	0.08
SmartScan Scene handset - **meeting**	**LCM 14818**	0.08
Locking Key Kit	**ECO 9724**	-

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Touch - **battery**	**SS 20212**	0.8
SmartScan Touch - **mains**	**SS 20213**	0.8

DIMENSIONS

86 · 35 · 86

DIMENSIONS

112 · 66 · 85 · 90 · 125 · 30 · 22 · 25

SMARTSCAN TOUCH OPTIONS

Mains version

Battery version

regular

teaching

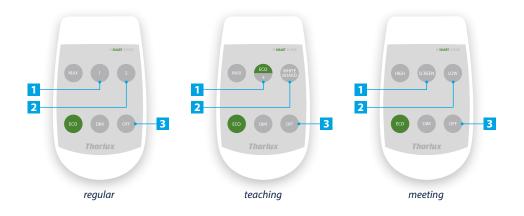*meeting*

SmartScan Wireless Switch Module

The SmartScan Wireless Switch Module 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).

The following control options are available

Eco: Energy saving mode/Activation for absence detection

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 pages 24-27 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, see page 85 for details.

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Wireless Switch Module	**SS 20054**	0.03
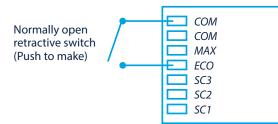
DIMENSIONS

Typical Applications

Absence Detection

Normally open retractive switch (Push to make)

COM
COM
MAX
ECO
SC3
SC2
SC1

On/Off Control

Two way - centre off retractive switch

COM
COM
MAX
ECO
SC3
SC2
SC1
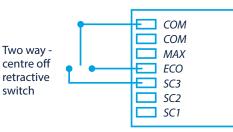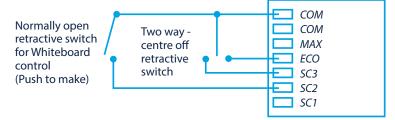
Classroom On/Off Control with Whiteboard Scene

Normally open retractive switch for Whiteboard control (Push to make)

Two way - centre off retractive switch

COM
COM
MAX
ECO
SC3
SC2
SC1

ColourActive Touch

RANGE
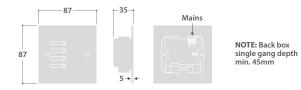
DESCRIPTION	CAT. No.	APPROX. kg
ColourActive Touch	**SS 18547**	0.08

DIMENSIONS

87

87

35

5

Mains

NOTE: Back box single gang depth min. 45mm

TOUCH SENSITIVE WALL PLATE FOR LOCAL GROUP COLOUR TEMPERATURE CONTROL

UKCA CE

SPECIFICATION

• 5mm thick polycarbonate with capacitive touch

• Provides manual control or override of the colour temperature of the luminaires

• Multiple wall plates can be used to control each group
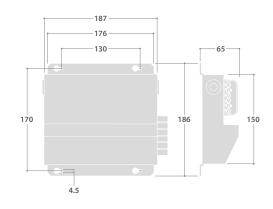
SmartScan Hub

SmartScan Programmer

Allows integration of non-SmartScan luminaires into the SmartScan system.

Simple and fast setting of operational parameters from ground level.

187
176
130
65
170
186
150
4.5

ACCESSORIES

3-way luminaire to Hub connection lead stripped at one end **0.75mm²** *(for non factory fitted luminaires)*
3m - **LCM 14822**

3-way Hub extension lead **0.75mm²**
3m - **LCM 14823**

Circuit splitter
LCM 14928

198
121
51

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Hub - Conventionally wired	**SS 17718**	0.86
SmartScan Hub - Modular wired	**SS 17718TEE**	0.86

Non-SmartScan luminaires can be plugged into the SmartScan Hub using a factory fitted 1m connection lead (suffix luminaire catalogue number with **SHL**).
For further details see **www.thorlux.com/smart**

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Programmer - Smart Internal, Radar and Emergency	**LCM 10777SS**	0.6
SmartScan Programmer - Smart External	**SC 14228SS**	0.6

SmartScan Stand-alone Sensor

Recessed version - supplied complete with Controller

ENABLES CONTROL OF MULTIPLE DALI LUMINAIRES

IP40 RECESSED VERSION   **IP65** SURFACE VERSION

UKCA   CE

SPECIFICATION
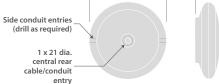
- Polycarbonate body finished white (RAL9016)
- Controls up to 10 DALI luminaires*
- Can be used stand-alone without connected luminaires to act as a wireless booster/range extender and/or as a slave PIR to extend detection coverage
- Class II device. Earth connection provided for looping only
- Terminals suitable for 1.5mm² looped cable
- Suitable for mounting heights up to 8 metres
- For presence detection guide see **www.thorlux.com/controls**

* Assuming one DALI driver per luminaire

RANGE

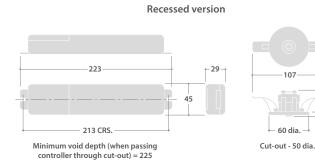| DESCRIPTION	CAT. No.	APPROX. kg
SmartScan Stand-alone Sensor - **Recessed** ■	**SS 18650**	0.20
SmartScan Stand-alone Sensor - **Surface**	**SS 18651**	0.32

■ Add suffix **'TEE'** for pre-fitted plug & socket connections and flying lead (3m) for use with the Thorlux 6-way Modular Wiring Systems.

e.g. **SS 18650TEE**

Surface version

ACCESSORY

DESCRIPTION	CAT. No.
T-bar mounting bracket for recessed version	SLA 13101

SmartScan Wireless Standards Compliance:
Europe: EN 300 220-1 V2.4.1 / EN 301 489-3 V1.6.1
Australasia: ACMA 2014 Radio Communication Standard 2014
Thorlux Patented Wireless Technology - GB2575724

DIMENSIONS

Recessed version

223
29
45
213 CRS.

Minimum void depth (when passing controller through cut-out) = 225

107
33 39
60 dia.

Cut-out - 50 dia.

Sensor connected to controller by 900mm lead

Surface version

170 dia.
57

Side conduit entries (drill as required)
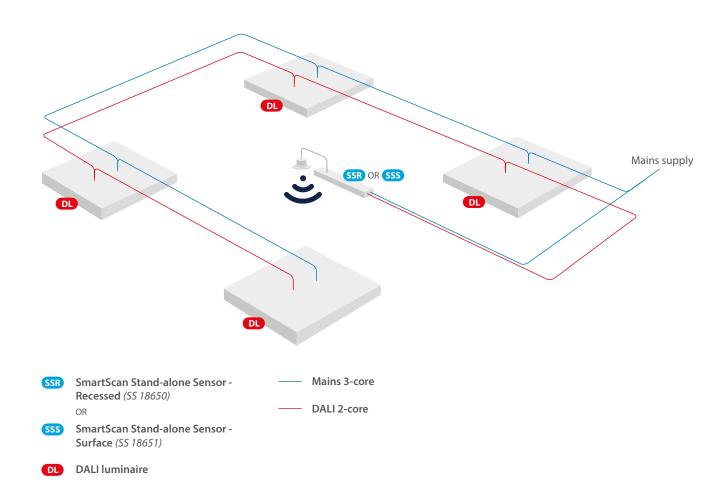
1 x 21 dia. central rear cable/conduit entry

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.
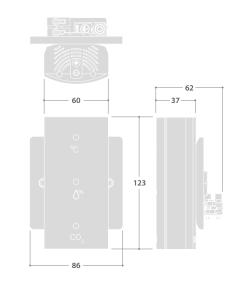
SSR	**SmartScan Stand-alone Sensor - Recessed** (SS 18650)
	OR
SSS	**SmartScan Stand-alone Sensor - Surface** (SS 18651)
DL	**DALI luminaire**

— Mains 3-core
— DALI 2-core

Air Quality Sensor

*Lexi fitted with
Air Quality Sensor*

DIMENSIONS

60
62
37
123
86

INDOOR AIR QUALITY SENSOR

IP40 UK CA CE

SPECIFICATION

• Polycarbonate body finished white (RAL9016)

• Monitors temperature, humidity and CO_2 throughout the day

• Uploads data to SmartScan website daily (Gateway required)

• Coloured LED indicators show status

• Can be supplied factory-fitted to a LEXI exit sign or stand-alone for installation on a single gang pattress

RANGE

DESCRIPTION	CAT. No.	APPROX. kg
Air quality Sensor	**AQS 19181**	0.15

Available pre-fitted to a LEXI exit sign. Suffix LEXI catalogue number with **AQS** e.g. **WLX17463AQS**

SmartScan Wireless Standards Compliance:
Europe: EN 300 220-1 V2.4.1 / EN 301 489-3 V1.6.1
Australasia: ACMA 2014 Radio Communication Standard 2014
Thorlux Patented Wireless Technology - GB2575724

Site Services

COMMISSIONING SERVICE

Thorlux offers a professional on-site commissioning service to ensure that SmartScan products are configured to provide the desired performance and return on investment. Commissioning begins with identifying the end-user's project requirements and ends with ensuring that the installed systems satisfy these requirements.

Commissioning of lighting is now an integral part of the requirements for new buildings and major refurbishments under Building Regulations. Paragraph L1(b)(iii) of Schedule 1 to the Building Regulations requires fixed building services to be commissioned by testing and adjustment as necessary to ensure that they use no more fuel and power than is reasonable in the circumstances.

Thorlux offers a full on-site commissioning and maintenance service using our own, highly qualified engineering team.

All engineers are Thorlux trained and hold all relevant industrial qualifications, including:

- **PASMA scaffold certification**
- **IPAF powered access operation such as scissor and boom lifts 3A and 3B**
- **Annual asbestos awareness training**
- **CSCS skills card**
- **CIS Electrical Safety card**
- **CBS criminal records check**

SERVICE PLUS

Thorlux will monitor and maintain new installations for 12 months from the commissioning date. After this period products are still covered by our standard 5 year warranty.

In addition to the standard warranty, Thorlux can offer an extended service where our engineers will continue to monitor and maintain your lighting system, this is known as Service Plus.

Service Plus offers:
- **Constant off-site monitoring of your installation by Thorlux**
- **On-site, in hours attendance by Thorlux qualified and certified engineers to rectify any system issues**
- **Peace of mind that your system is fully maintained**

Thorlux Lighting

Designers, manufacturers and suppliers of professional lighting systems

INDUSTRIAL LUMINAIRES
COMMERCIAL LUMINAIRES
FLOODLIGHTING LUMINAIRES
ARCHITECTURAL LUMINAIRES
HEALTHCARE LUMINAIRES
HAZARDOUS AREA LUMINAIRES
RETAIL AND DISPLAY LUMINAIRES
CONTROLS AND SYSTEMS

A DIVISION OF F.W. THORPE PLC

Thorlux Carbon Offsetting Project:
www.thorlux.com/trees

The information given in this catalogue is typical and must not be interpreted as a guarantee of individual product performance and/or characteristics. We reserve the right to alter specifications and designs without prior notice.

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ISO 45001 Occupational Health and Safety Management

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SUSTAINING MEMBER Society of Light and Lighting

LIGHTING INDUSTRY ASSOCIATION

MADE IN THE UK

Lighting Council AUSTRALIA MEMBER

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